SECTION 4

ELECTRICAL ADJUSTMENT

CONTENTS

1. POWER 4-1
    1-1. +5V and +12V Confirmation & Adjustment 4-1
2. SYSTEM CONTROL 4-1
    2-1. Super Impose Position Adjustment 4-1
3. MECH INTERFACE 4-2
    3-1. Photo Sensor Voltage Adjustment 4-2
4. SERVO 4-2
    4-1. Motor Torque Offset Adjustment 4-2
5. EQ and RF Adjustment 4-3
    5-1. AUTO ADJUSTMENT PROCEDURE 4-3
        5-1-1. Preparation and Connection of Auto EQ Adjustment Tool 4-3
        5-1-2. DVCPRO Playback Adjustment 4-8
        5-1-3. DV (Consumer) Playback Adjustment 4-10
        5-1-4. Confirmation of Error Rate (PLAYBACK) 4-11
        5-1-5. DVCPRO Recording Adjustment 4-12
        5-1-6. Confirmation of Error Rate (REC) 4-14
    5-2. MANUAL ADJUSTMENT PROCEDURE 4-18
    5-3. EQ ADJUSTMENT 4-19
        5-3-1. PLL Lock Adjustment (PB) 4-19
        5-3-2. PLL Latch Phase Coarse Adjustment (PB) 4-19
        5-3-3. PLL Slice Level Coarse Adjustment (PB) 4-20
        5-3-4. EQ Adjustment (1) (PB) 4-20
        5-3-5. EQ Adjustment (2) (PB) 4-21
        5-3-6. PLL Latch Phase Fine Adjustment (PB) 4-21
        5-3-7. PLL Slice Level Fine Adjustment (PB) 4-22
        5-3-8. Viterbi A/D Input Level Adjustment 4-22
        5-3-9. PLL Lock Adjustment (R/P) 4-23
        5-3-10. PLL Latch Phase Adjustment (R/P) 4-24
        5-3-11. PLL Slice Level Adjustment (R/P) 4-24
        5-3-12. EQ Adjustment (1) (R/P) 4-24
        5-3-13. EQ Adjustment (2) (R/P) 4-25
        5-3-14. PLL Latch Phase Fine Adjustment (R/P) 4-25
        5-3-15. PLL Slice Level Fine Adjustment (R/P) 4-26
        5-3-16. PLL Lock Confirmation (Consumer DV) 4-26
        5-3-17. PLL Slice Level Coarse Adjustment (Consumer DV) 4-27
        5-3-18. EQ Adjustment (1) (Consumer DV) 4-27
        5-3-19. EQ Adjustment (2) (Consumer DV) 4-28
        5-3-20. PLL Slice Level Fine Adjustment (Consumer DV) 4-28
        5-3-21. Consumer DV Viterbi Confirmation 4-29
        5-3-22. Final Confirmation of Error rate 4-29
    5-4. REC AMP BOARD 4-30

5-4-1. REC Current, Frequency Characteristic Adjustment 4-30
5-4-2. Rotary Erase Current Adjustment 4-31
6. REC PB 4-32
6-1. PLL Lock DC Level Adjustment 4-32
6-2. Audio VCO Center Freq. Adjustment 4-32
7. Video Out P.C. Board (F4) [FOR NTSC ONLY] 4-33
7-1. REF PLL Center Adjustment 4-34
7-2. REF CF Detection Adjustment 4-34
7-3. Ref. H Phase Adjustment 4-35
7-4. Composite Set-up Adjustment 4-35
7-5. Sync Level Adjustment 4-35
7-6. Carrier Balance Adjustment 4-35
7-7. Composite Y Level Adjustment 4-36
7-8. Composite Y Frequency Response Adjustment 4-36
7-9. Vector Adjustment 4-37
7-10. Composite Pb/Pr Timing Adjustment 4-38
7-11. Composite Y/C Timing Adjustment 4-38
7-12. Sub-Carrier Phase Adjustment 4-39
7-13. Burst Adjustment 4-39
7-14. Burst Position Adjustment 4-40
7-15. Confirmation of Vector 4-40
7-16. Component Ref. H & Sub-Carrier Phase Adjustment 4-41
7-17. Component Y Level Adjustment 4-41
7-18. Video Phase Adjustment 4-42
7-19. Component Y Frequency Response Adjustment 4-42
7-20. Component Pb Level Adjustment 4-42
7-21. Component Pr Level Adjustment 4-42
7-22. Component Y/Pb Timing Adjustment 4-43
7-23. Component Y/Pr Timing Adjustment 4-43
7-24. Composite Set up Adjustment (Set up ADD mode) 4-44
7-25. Composite Video Level Adjustment (Set up ADD mode) 4-44
7-26. Vector Adjustment (Set up ADD mode) 4-45
7. Video Out P.C. Board (F4) [FOR PAL ONLY] 4-46
7-1. REF PLL Center Adjustment 4-47
7-2. REF CF Detection Adjustment 4-47
7-3. Ref. H Phase Adjustment 4-48
7-4. Composite Set-up Adjustment 4-48
7-5. Sync Level Adjustment 4-48
7-6. Carrier Balance Adjustment 4-48
7-7. Composite Y Level Adjustment 4-49
7-8. Composite Y Frequency Response Adjustment 4-49
7-9. Vector Adjustment 4-50
7-10. Composite Pb/Pr Timing Adjustment 4-51
7-11. Composite Y/C Timing Adjustment 4-51
7-12. Sub-Carrier Phase Adjustment 4-52
7-13. Burst Adjustment 4-52
7-14. Burst Position Adjustment 4-53
7-15. Confirmation of Vector 4-53
7-16. Component Ref. H & Sub-Carrier Phase Adjustment 4-54
7-17. Component Y Level Adjustment 4-54
7-18. Video Phase Adjustment 4-55
7-19. Component Y Frequency Response Adjustment 4-55

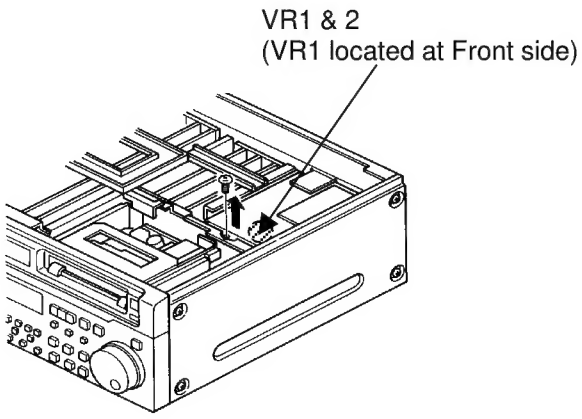
7-20. Component Pb Level Adjustment 4-55
7-21. Component Pr Level Adjustment 4-55
7-22. Component Y/Pb Timing Adjustment 4-56
7-23. Component Y/Pr Timing Adjustment 4-56
8. V IN P.C. Board [FOR NTSC ONLY] 4-57
8-1. Preparation for Video In Adjustment 4-57
8-2. 13.5MHz VCO Adjustment 4-57
8-3. Component Y Timing Adjustment 4-57
8-4. Component Y Level Adjustment 4-58
8-5. Component PB Level Adjustment 4-58
8-6. Component PR Level Adjustment 4-58
8-7. Component Y/C Timing Adjustment 4-58
8-8. Composite Input Level Adjustment 4-59
8-9. Composite Y Level Adjustment 4-59
8-10. Composite Chroma Level Adjustment 4-59
8-11. Composite Color Demodulation Adjustment 4-60
8-12. Composite PB Level Adjustment 4-60
8-13. Composite PR Level Adjustment 4-60
8-14. Composite YC Timing Adjustment 4-61
8-15. Composite SCH Detection Adjustment 4-62
8-16. Composite Vector Adjustment 4-62
8. V IN P.C. Board [FOR PAL ONLY] 4-63
8-1. Preparation for Video In Adjustment 4-63
8-2. 13.5MHz VCO Adjustment 4-63
8-3. Component Y Timing Adjustment 4-63
8-4. Component Y Level Adjustment 4-64
8-5. Component PB Level Adjustment 4-64
8-6. Component PR Level Adjustment 4-64
8-7. Component Y/C Timing Adjustment 4-64
8-8. Composite Input Level Adjustment 4-65
8-9. Composite Y Level Adjustment 4-65
8-10. Composite Chroma Level Adjustment 4-65
8-11. Composite Colour Demodulation Adjustment 4-66
8-12. Composite PB Level Adjustment 4-66
8-13. Composite PR Level Adjustment 4-66
8-14. Composite YC Timing Adjustment 4-67
8-15. Composite SCH Detection Adjustment 4-68
8-16. Composite Vector Adjustment 4-68
9. AUDIO ADDA 4-69
9-1. Initial Setting of Audio Adjustment 4-69
9-2. Output Balance Adjustment 4-69
9-3. Output Level Adjustment 4-70
9-4. Input CMRR Adjustment 4-70
9-5. Input Level Adjustment 4-70
10. CUE 4-71
10-1. Initial Setting of CUE Adjustment 4-71
10-2. CTL Erase Frequency Adjustment 4-71
10-3. CTL Erase/CUE Erase Current Adjustment 4-71
10-4. CUE Bias Current Adjustment 4-72
10-5. CUE PB Level Adjustment 4-72
10-6. CUE Noise Cancel Adjustment 4-72
10-7. CUE REC/PB Level Adjustment 4-72

1. POWER

1-1. +5V and +12V Confirmation & Adjustment

BOARD	POWER 2
SPEC.	5V: 5.1V ± 0.1V 12V: 11.8V ± 0.6V
TEST	TP6 (+5V), TP12 (+12V) (SYSCON BOARD:F2)
ADJUST	VR1 (+5V), VR2 (+12V)
INPUT	----------
MODE	EJECT
M.EQ	Digital Volt Meter

1. After connect the test point on SYSCON Board, turn the power ON.
2. Confirm that the voltage at TP6 and 12 in the specification.
3. If it is not, adjust VR1 and VR2 so that the voltage in the specification.



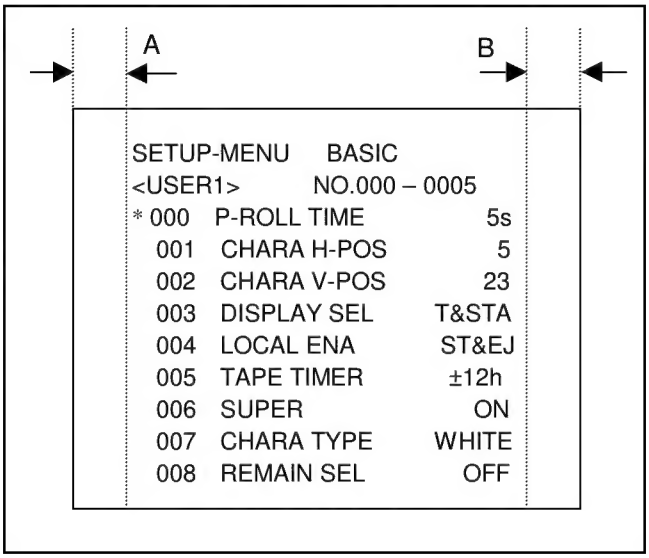
2. SYSTEM CONTROL

2-1. Super Impose Position Adjustment

BOARD	SYSCON (F2)
SPEC.	A = B
TEST	MONITOR
ADJUST	VC1
INPUT	----------
MODE	EJECT
M.EQ	Monitor TV

1. Press the MENU , and displayed the SETUP-MENU.
2. Adjust VC1 so that the width A and B are equal.
3. Press the MENU button, and finished the SETUP-MENU.

NOTE: The display of menu may be different the above figure.

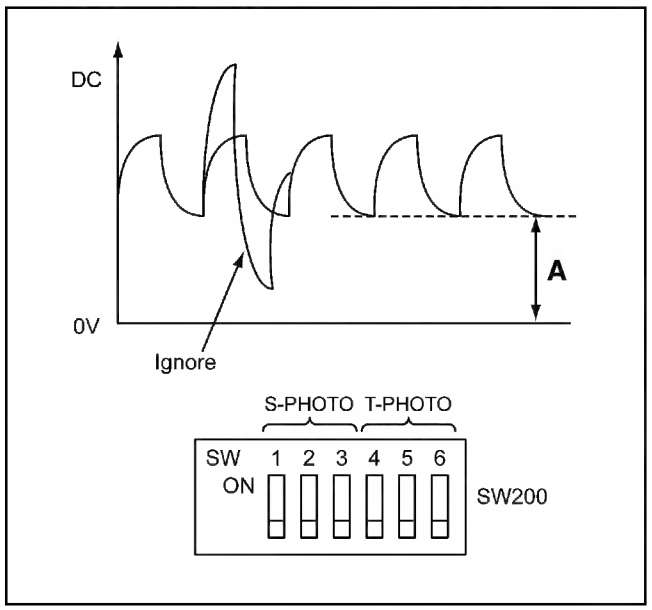


3. MECH INTERFACE

3-1. Photo Sensor Voltage Adjustment

BOARD	MECH INTERFACE
SPEC.	A = 3.0~4.3VDC
TEST	Foil Pattern of TP13 (Supply) Foil Pattern of TP14 (Take Up) (SYSCON BOARD)
ADJUST	DIP SW200 (MECH I/F BOARD)
INPUT	----------
MODE	EJECT
M.EQ	Oscilloscope VFK1423 (Tape Big./End Det. Cassette)

1. Remove the Bottom Panel.
2. Insert the VFK1423 and measure the voltage at TP13 and TP14.
3. Set the Dip SW200 so that the DV voltage "A" in the specification.



SW1 SW4	SW2 SW4	SW3 SW5	S-PHOTO T-PHOTO	Synthetic Resistance
1	1	1	A Voltage	420Ω
0	1	1	UP	460Ω
1	0	1	↑	660Ω
0	0	1	↕	750Ω
1	1	0	↕	880Ω
0	1	0	↓	1050Ω
1	0	0	A Voltage	3300Ω
0	0	0	DOWN	8200Ω

*: 1=ON, 0=OFF

4. SERVO

4-1. Motor Torque Offset Adjustment

BOARD	SERVIO (F1)
SPEC.	15 ± 2grcm (5 times average)
TEST	Connect Monitor TV to VIDEO OUT3
ADJUST	A03:T-REEL TRQ A04:S-REEL TEQ (EVR on Service Menu)
INPUT	----------
MODE	EJECT
TAPE	No Tape
M.EQ	VFK1191 (Dial Torque Gauge) VFK1152 (Dial Torque Gauge Adapter)

1. Set the REEL TABLE to M-cassette position.
2. Remove the Front Loading Unit with the connection cable or remove the Top Plate of Front Loading Unit, which is fixed by 6 screws.
3. Open the SERVO ADJUST menu on the Service menu and select the item " A03:T REEL TRQ ".
4. Set a Dial Torque Gauge to top of Take-up Reel Table.
5. Press the SEARCH button at 5 times and measure the value of Dial Torque Gauge at 5 times, then calculate the average and adjust EVR "T REEL TRQ" so that the average is in the specification.

Note: While press the SEARCH button, the REEL Table is rotated

6. Select the item " A04:S REEL TRQ ".
7. Set a Dial Torque Gauge to top of Take-up Reel Table.
8. Press the SEARCH button at 5 times and measure the value of Dial Torque Gauge at 5 times, then calculate the average and adjust EVR "S REEL TRQ" so that the average is in the specification.

5.EQ and RF Adjustment

EQ and RF adjustment can be executed by RF AUTO EQ software and RF AUTO ADJUSTMENT TOOL. This Service Manual mention of auto adjust procedure and manual adjustment procedure.

5-1. AUTO ADJUSTMENT PROCEDURE

5-1-1. Preparation and Connection of Auto EQ Adjustment Tool

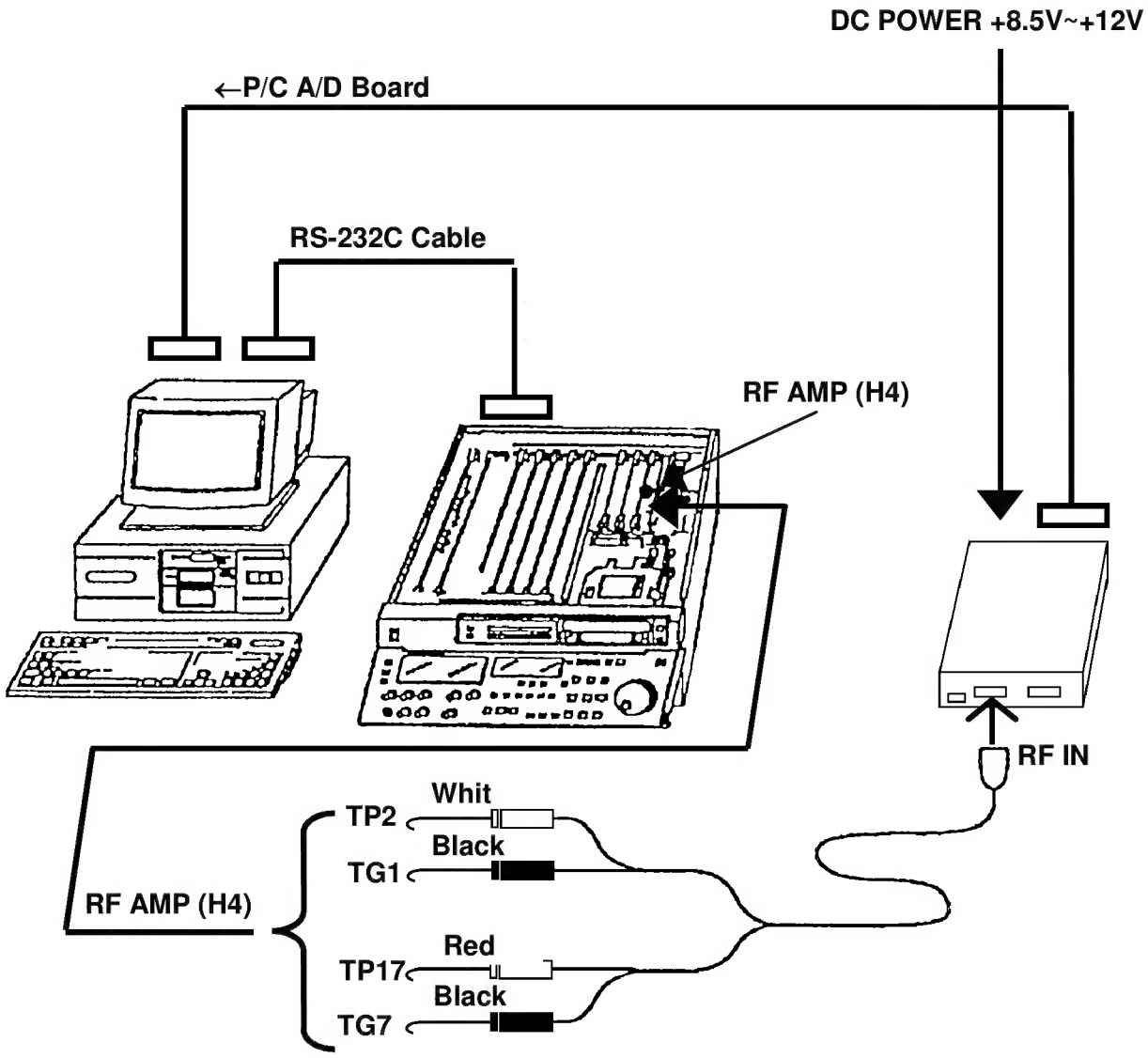
Test Point	TP2:PB HSW, TG1:GND (RF AMP Board:H4) TP17:PB ENV, TG7:GND (RF AMP Board:H4)
Equipment	• RF Auto Adjustment Tool(VFK1163) * This Tool attached 2 kinds of cable • RF Adjustment Software(VFK1160C) • IBM PC Compatible (486/66MHz or greater) • DAQ-12 A/D Card (Quatech): * This Board is install to PC as same as LISTA ADJ. • DC Power Supply (+8.5V to +12V) • RS-232C Cable (type of Cross cable)
Tape	**NTSC:** VFM3580KM(DVCPRO), VFM3010EDS (DV) **PAL:** VFM3680KM(DVCPRO), VFM3110EDS (DV) Self-recording and Playback Tape

1. Supply DC Voltage(+8.5 to +12V) to EQ Tool. RF Adjustment Tool requires DC power supply (+8.5V to +12V). Use DC power supply or AC Adaptor movie like " VW-AMC1 ".
2. Connect the extension board with RF AMP (H4) board and connect the clip of cable from EQ tool to Test Point follow as below table on the RF AMP P.C.Board.

WHITE CLIP	TP2	RED CLIP	TP17
BLACK CLIP	TG1	BLACK CLIP	TG7

3. Connect the 62 pin D-Sub connector of cable from EQ tool to A/D Board of PC.
4. Connect the RS232C cable to between VTR and PC.

Connection


DC POWER +8.5V~+12V
←P/C A/D Board
RS-232C Cable
RF AMP (H4)
RF IN
RF AMP (H4)
Whit
TP2
Black
TG1
Red
TP17
Black
TG7

Initial Setting

< Setting of VTR >

1. Open the Set Up Menu in User mode (do not use Service Mode) and confirm the menu is in <USER1> and set the RS-232C mode as shown below.

204	RS232C SEL	ON
205	BAUD RATE	9600
206	DATA LENGTH	8
207	STOP BIT	1
208	PARITY	NON
209	RETURN ACK	ON

2. Press SET button after setting the above items.
3. Set the LOCAL / REMOTE SW to REMOTE side.
4. Set the service switch (DIP SW 1-1: located at bottom side of front panel) to on position.

During Automatic EQ adjustment, adjustment is done with ALIGNMENT tape, so rewind the necessary amount of adjustment tape (DVCPRO MASTER and DV MASTER tape) before boot up the EQ automatic adjustment software.

NOTE: When the VTR detected tape end position during adjustment, rewind the tape automatically to tape beginning position and continuation of adjustment.

Boot Up the RF Automatic Adjustment Software.

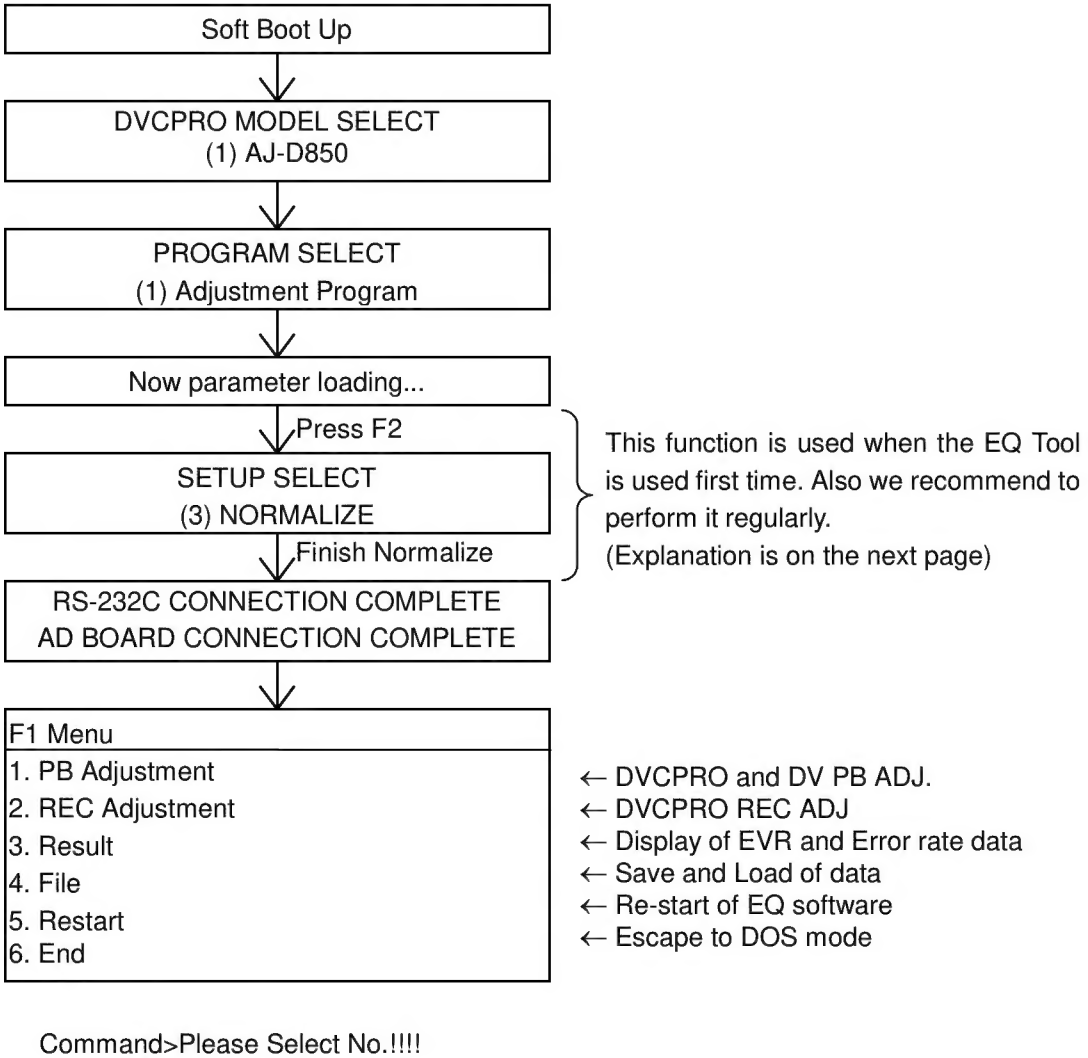
1. Boot Up the EQ Adjustment software after setting and connection.

   ☆ Install and boot up

   Copy the all files in the floppy disk of EQ adjustment software to hard disk (for example as directly "RF ADJ": C:\RFADJ).

   Executive file is DVCRF, so type "DVCRF" and press Enter, then boot up Auto EQ software.

2. Before boot up software, please confirm the tape does not into VTR and LOCAL/REMOTE switch on the front panel set to REMOTE side.
3. After boot up software, appear the message "DVCPRO MODEL SELECT " on the screen, then select the model. In case of the AJ-D850, select the item "(1) AJ-D850".
4. Next select item "(1) Adjusting Program" on the "PROGRAM SELECT " menu.
5. After item 4 the parameter loading menu is appeared and wait about 20 second. This waiting time can be skipped by pressing ENTER key. Then "RS-232C CONNECTION COMPLETE", "AD BOARD CONNECTION COMPLETE" messages and Main Menu are appeared.



☆Normalize of RF AUTO ADJUSTMENT TOOL

Press <F2> enter to SET UP, then appeared display as below.

SETUP SELECT

(1) RS-232C
(2) AD
(3) NORMALIZE
(4) PRGKIND
(5) END

INPUT No!! or Select by cursor Key (U/D) and hit RETURN

Please select the "(3) NORMALIZE", and press Enter key, then appeared message "Play back the DVCPRO MASTER TAPE, Then PRESS ENTER Key".

Insert DVCPRO color bar alignment tape and press Enter key, then measurement value appeared as indicated as below.

Tool BOX Normalizing

	5MHz BPF	10MHzBPF	20MHzBPF	APF
USER DATA	0.025028	0.032613	0.030525	0.011855
DEFAULT DATA	0.028084	0.031761	0.030125	0.011872

Normalizing Again? [Y/N]

When you use RF Adjustment Tool first time, please confirm that the value of USER DATA and DEFAULT DATA, which should be difference within +/- 0.01.

When performing this normalization regularly under condition of the same combination of the PC, A/D Board and EQ Tool, the difference of USER DATA and DEFAULT DATA should be with in +/- 0.005.

If USER DATA value is became out of spec, RF Adjustment Tool (VFK1163) have a problem.

In case of the data within spec, please select the "N", the appear the massage below.

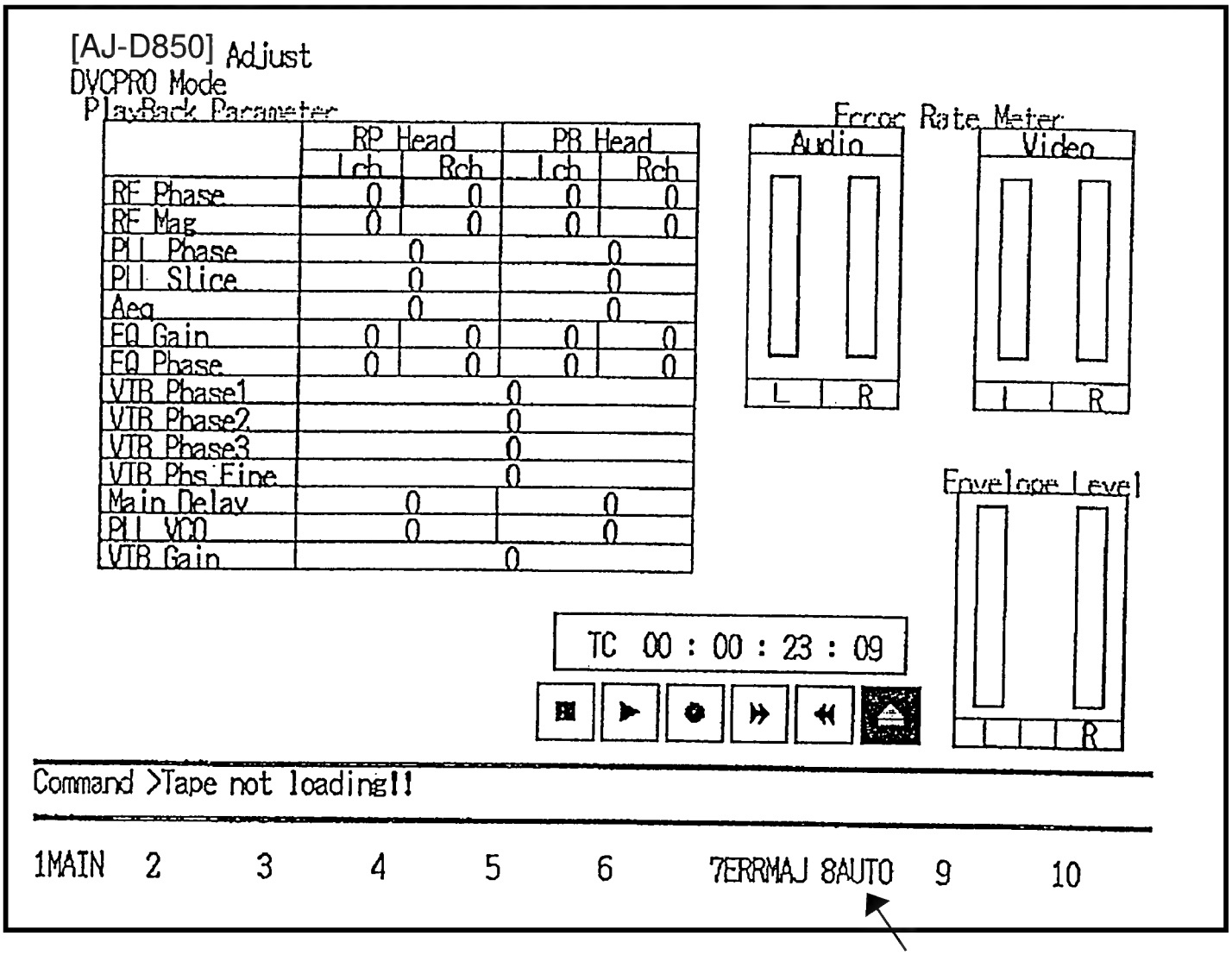
Please Select (U)ser / (D)efault!

Please select "U", then appeared SETUP SELECT Menu.

Eject the tape and select "(5) END", then the screen return to parameter loading.

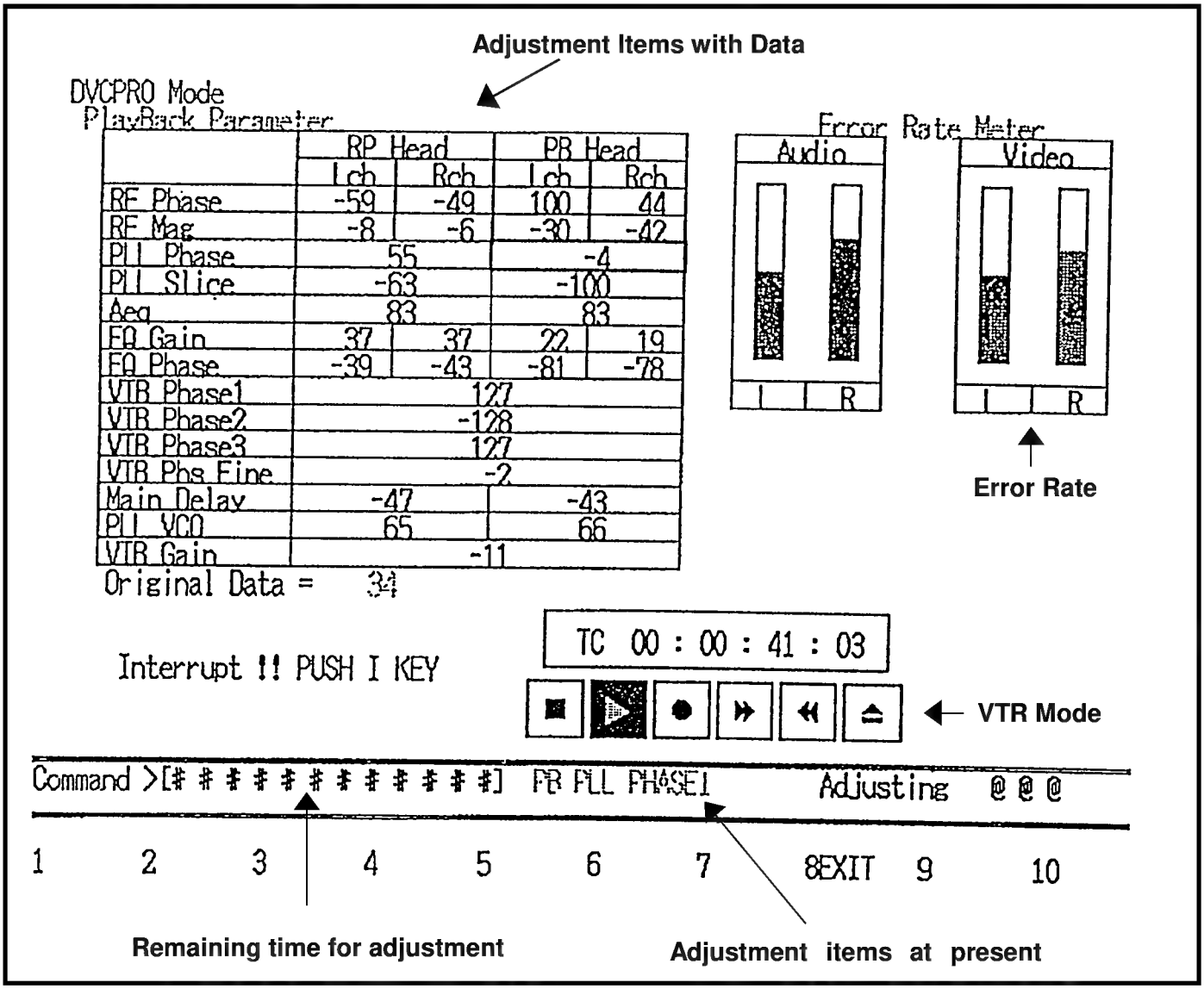
5-1-2. DVCPRO Playback Adjustment

1. Select "1. PB Adjustment" in the Main Menu.
2. Adjustment menu is appeared. "Tape not loading !!" message is appeared, press F8 key (AUTO) for automatic adjustment. The bottom numbers show the Function keys.



3. In the SELECT MENU, select "1. ALL Adjustment".
4. Then the message of "PLEASE INSERT DVCPRO MASTER TAPE" is appeared in the former adjustment menu, insert DVCPRO MASTER (VFM3580KM : NTSC) or (VFM3680KM : PAL).

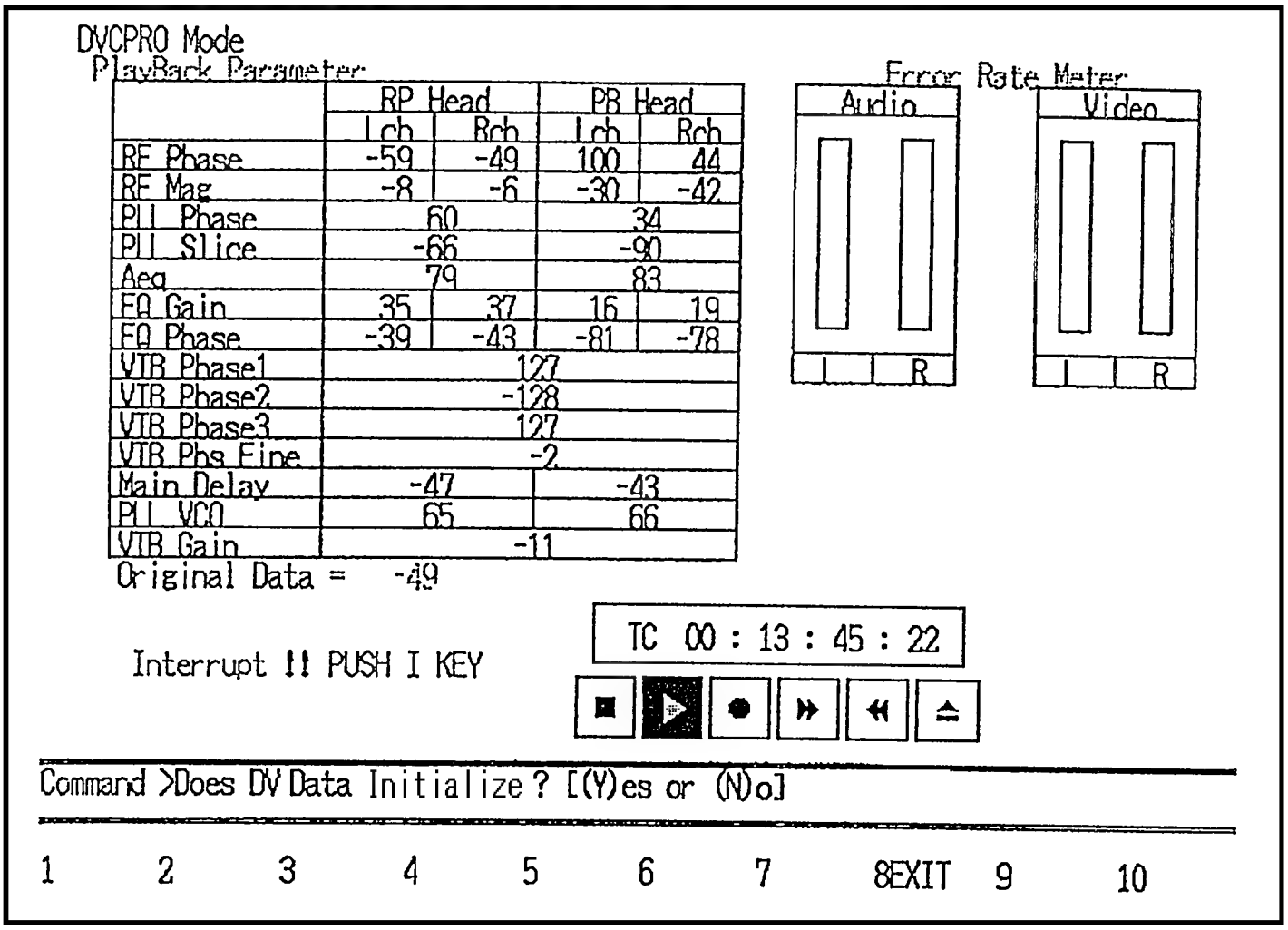
5. The following picture is appeared and automatic adjustment is started. During automatic adjustment, do not touch VTR and PC.
6. Adjustment is completed in 7 or 8 minutes. Then DV Playback adjustment is started. At bottom of the screen, “Please insert DV master Tape” is displayed.



5-1-3. DV (Consumer) Playback Adjustment

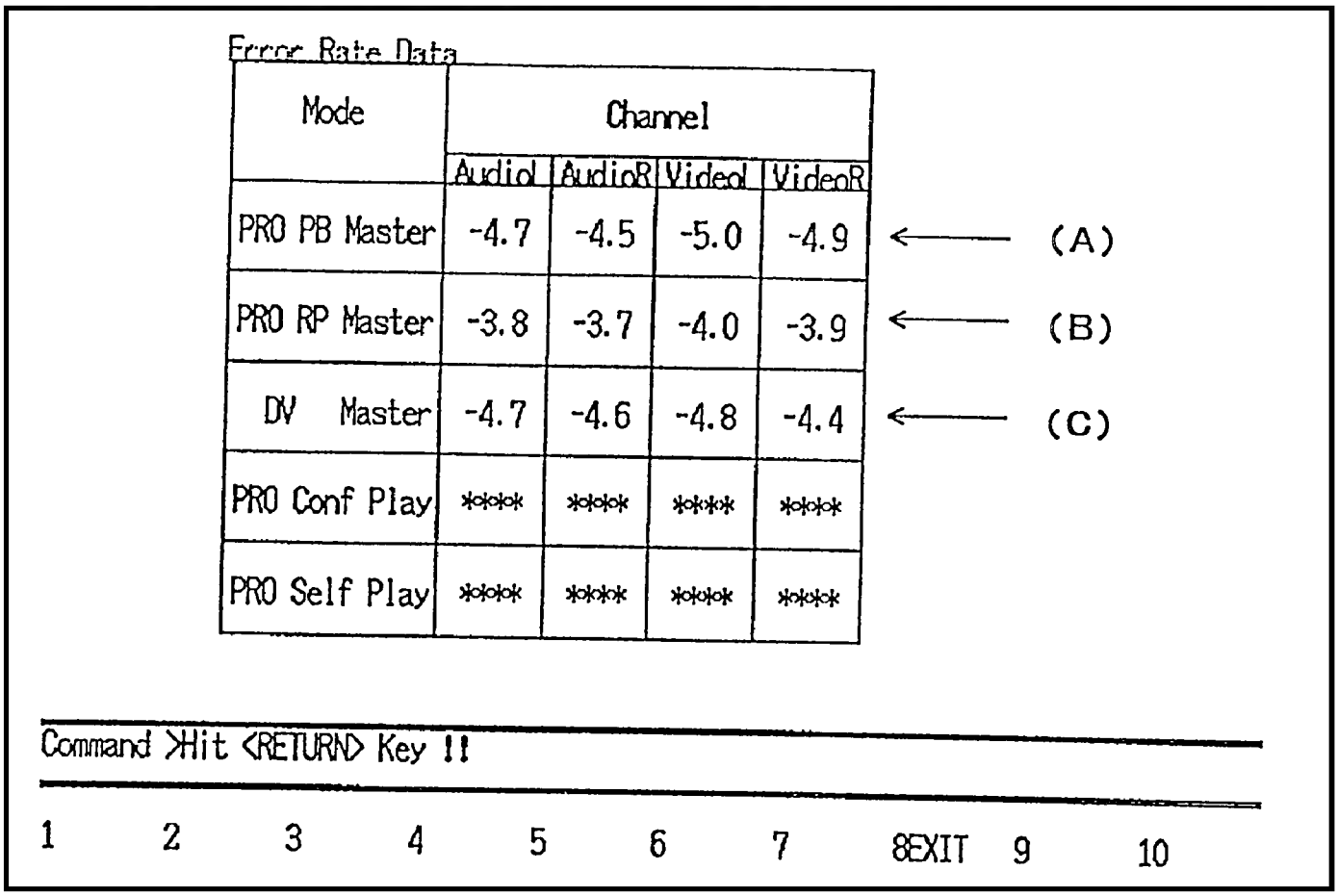
This adjustment is done following DVCPRO Playback adjustment.

1. Tape is automatically ejected after DVCPRO Playback Adjustment. Insert DV MASTER Tape when "Please Insert DV MASTER" message is appeared.
2. When "DV Data Initialize?" [(Y)es or (N)o]" message is appeared, select N.
3. DV Playback automatic adjustment is started.
   During automatic adjustment, do not touch VTR and PC.



5-1-4. Confirmation of Error Rate (PLAYBACK)

1. After DVCPRO and DV Playback adjustment, measured error rate is automatically displayed as shown below.



2. Confirm the numbers at (A), (B) and (C) they are displayed in Green.
   If the color is red the error rate is too high.
   Especially the numbers at (A) and (C) must be Green. If part of row of (B) is red, clean the head and the tape transportation and re-adjust the DVCPRO RP Playback adjustment.

<Procedures>

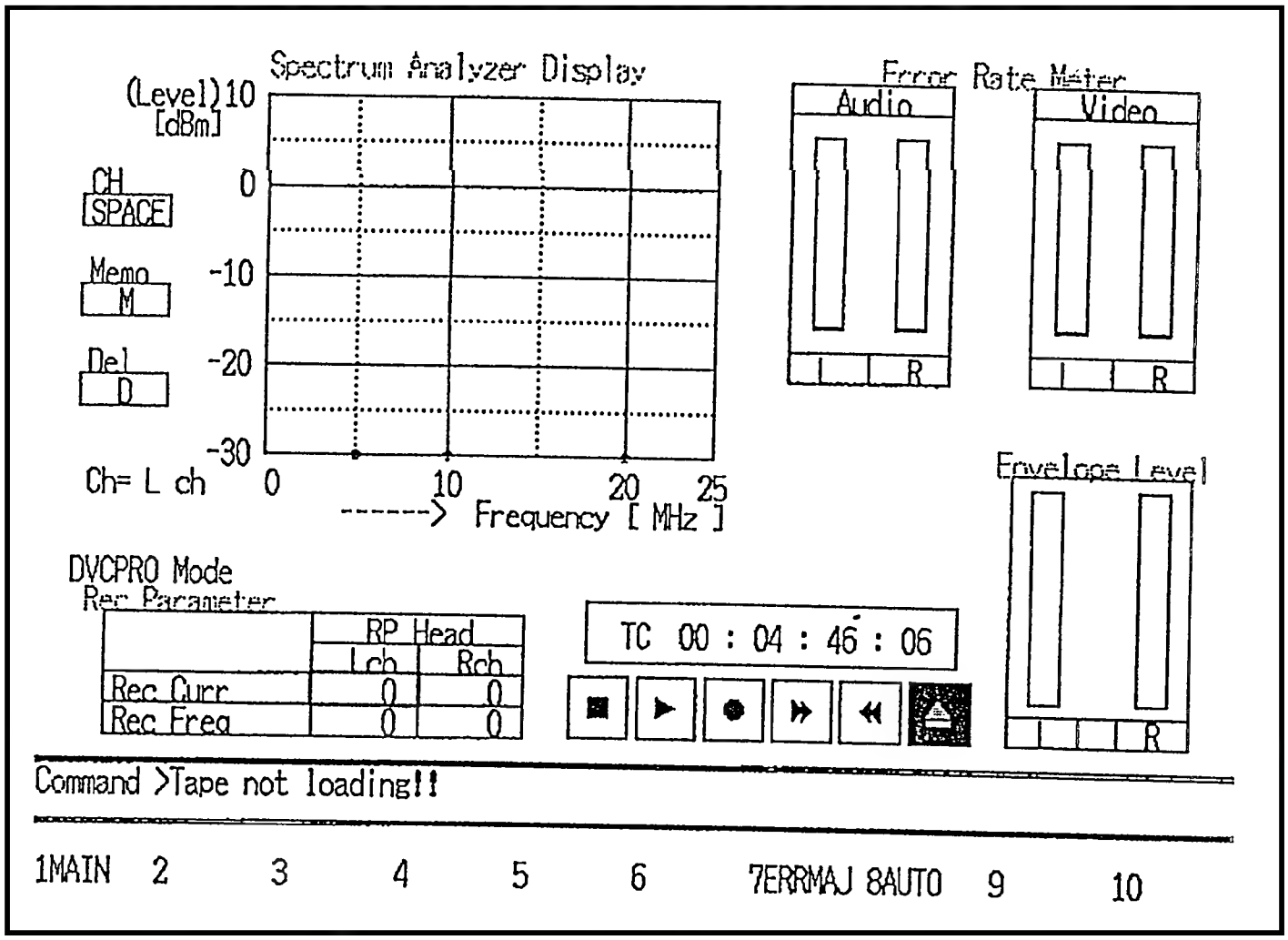
1. If Return key is pressed, Select Menu is displayed and select “3. DVCPRO RP ONLY Adjustment”. Then follow the message on PC and re-adjust RP mode only.
2. After adjustment error rate is automatically displayed.

Confirm the error rate and if they are correct, do the next adjustment.

5-1-5. DVCPRO Recording Adjustment

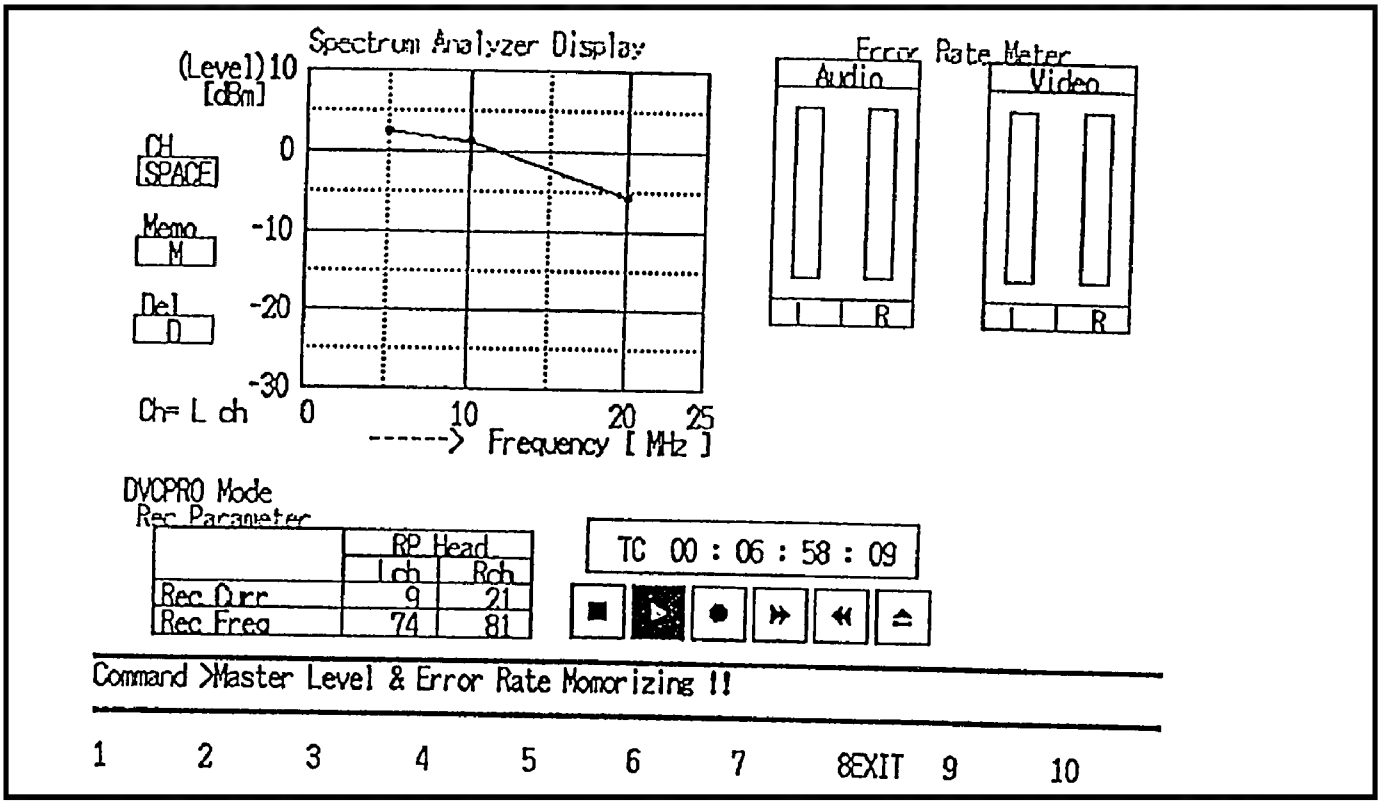
Start the DVCPRO Recording Adjustment after Playback Adjustment and Error Rate Confirmation.

1. Return to Main Menu. Press Enter key on the Error Rate Display Menu and open the Sub menu.
2. Select “6. Return to manual” and press F1 key (MAIN) and return to Main Menu.
3. Select “2. REC Adjustment” and following “REC Adjustment “ menu is appeared.



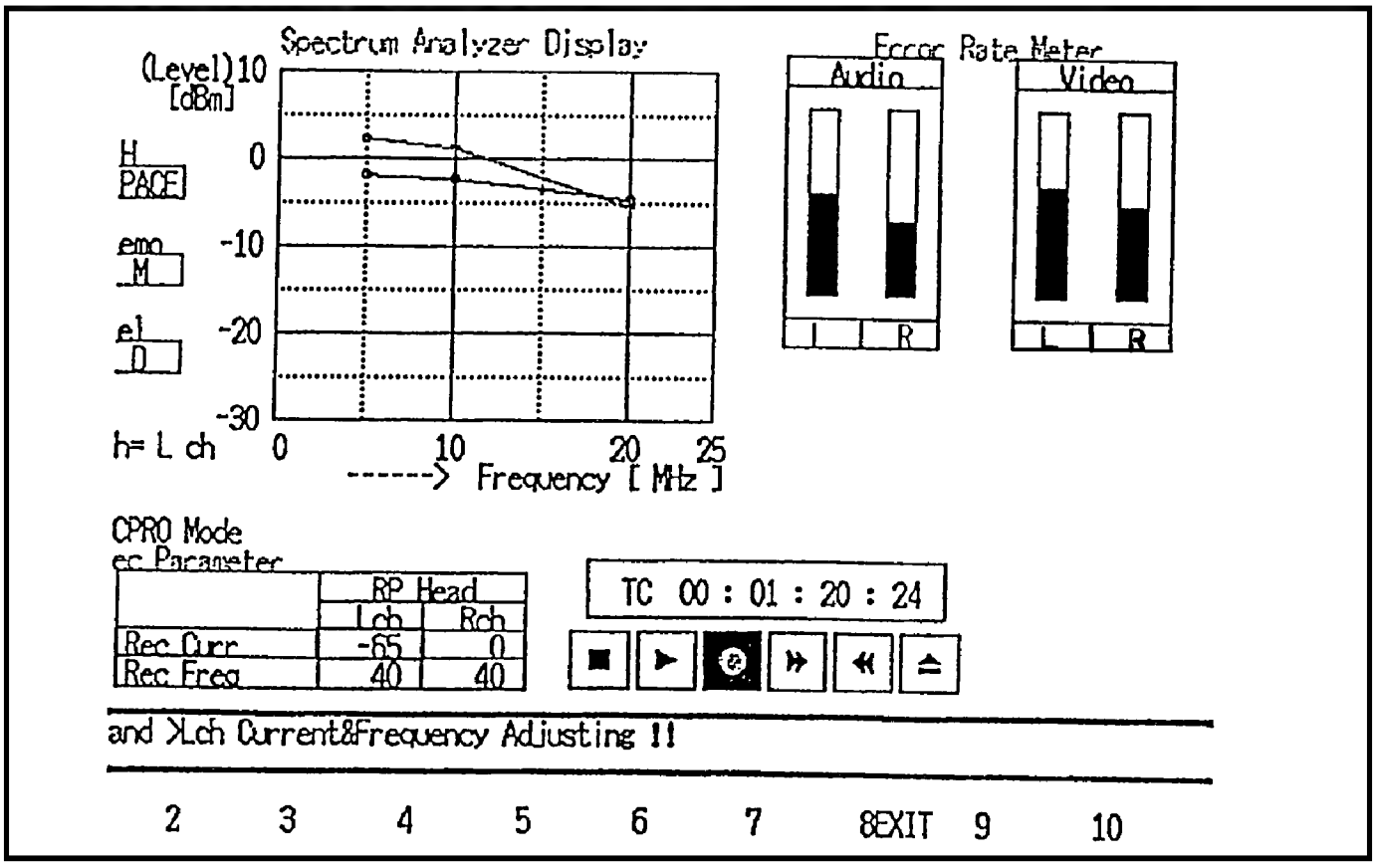
4. Tape not loading message is appeared. For the automatic adjustment press F8 key (AUTO).
5. Select “1. Adjust start” in the Sub Menu.
6. The messaged of “Please Insert DVCPRO MASTER TAPE (COLOR BAR)” is appeared, and insert the DVCPRO color bar master tape. After inserting the master tape, Master level and error rate level are automatically memorized.

7. During data memorizing, following menu is appeared and waveform is appeared in the Spectrum Analyzer Display part.



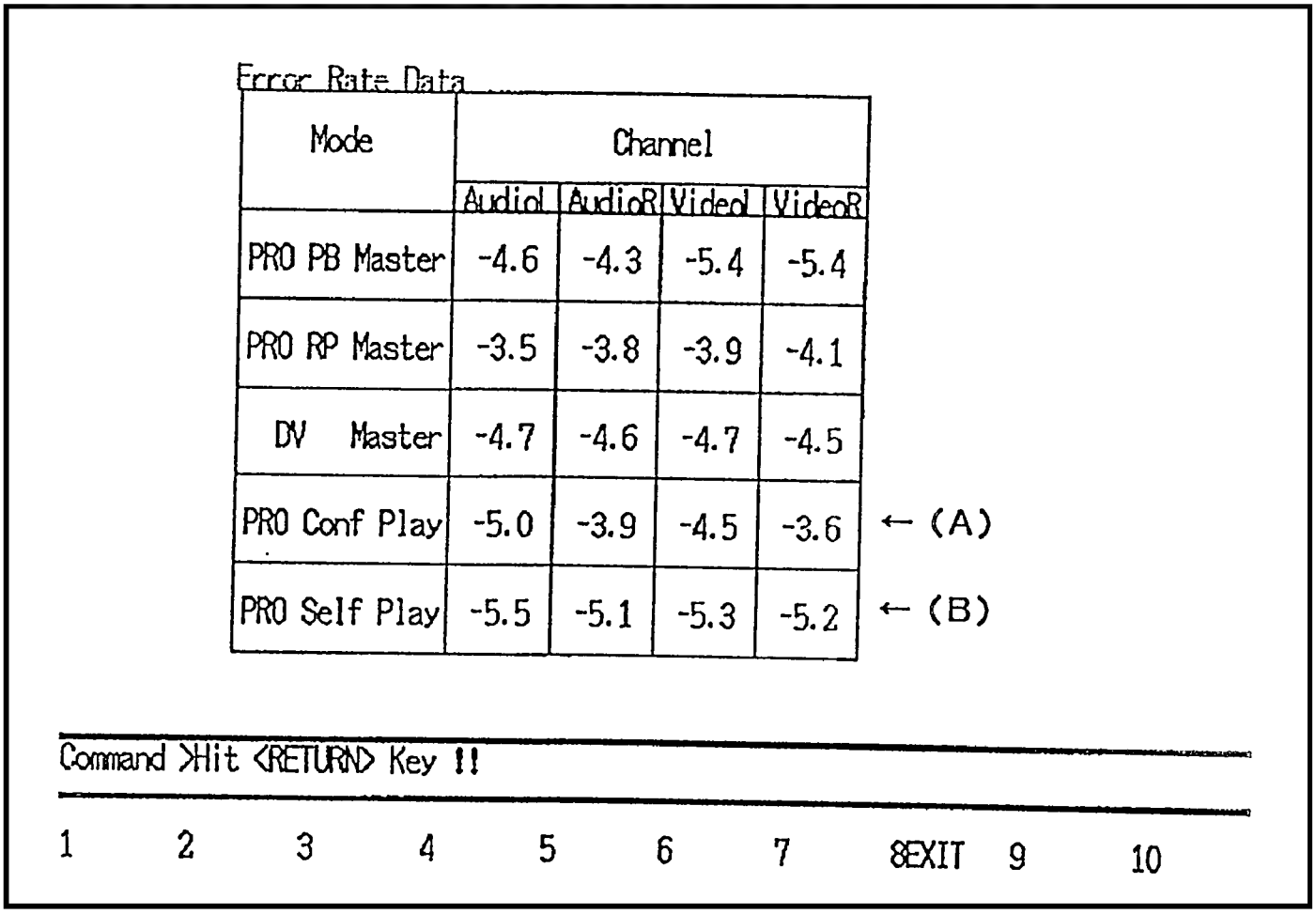
8. Tape is ejected after completion of Master Tape Data Memorizing, and “Please Insert Blank Tape” message is appeared. Then insert self recording and playback tape.

9. Start the Automatic Adjustment.



5-1-6.Confirmation of Error Rate (REC)

10. After completion of Automatic Adjustment "<Return> to NEXT STEP" message is appeared, the press Return (ENTER) key.
11. "Please Adjust VC600 and VC601 Trimmer Volume and Minimize Error Rate !!" message is appeared. At this menu, observe the error rate at upper right part of the screen and if the error rate is too high (RED color display), adjust manually VC600 and VC601 on the RF AMP (H4) BOARD. If the error rate display changed to green, press Return (ENTER) key.
12. Automatically goes to Error Rate measurement mode and "Error Rate Checking !!" message is displayed.
13. Error rate is displayed and completion of measurement.

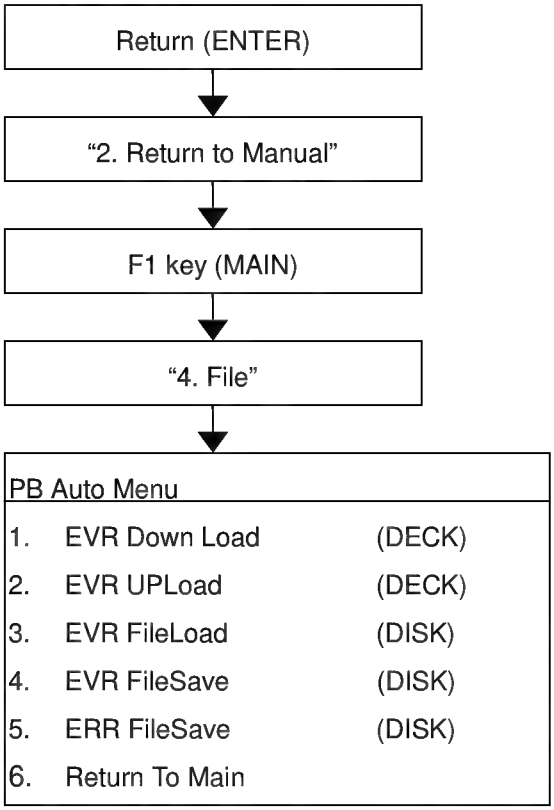


14. The row of (A) shows the error rate for confidence playback, the row of (B) shows the error rate for self recording and playback. Confirm the numbers are displayed in Green color.

Save RF Data and Error Rate Data

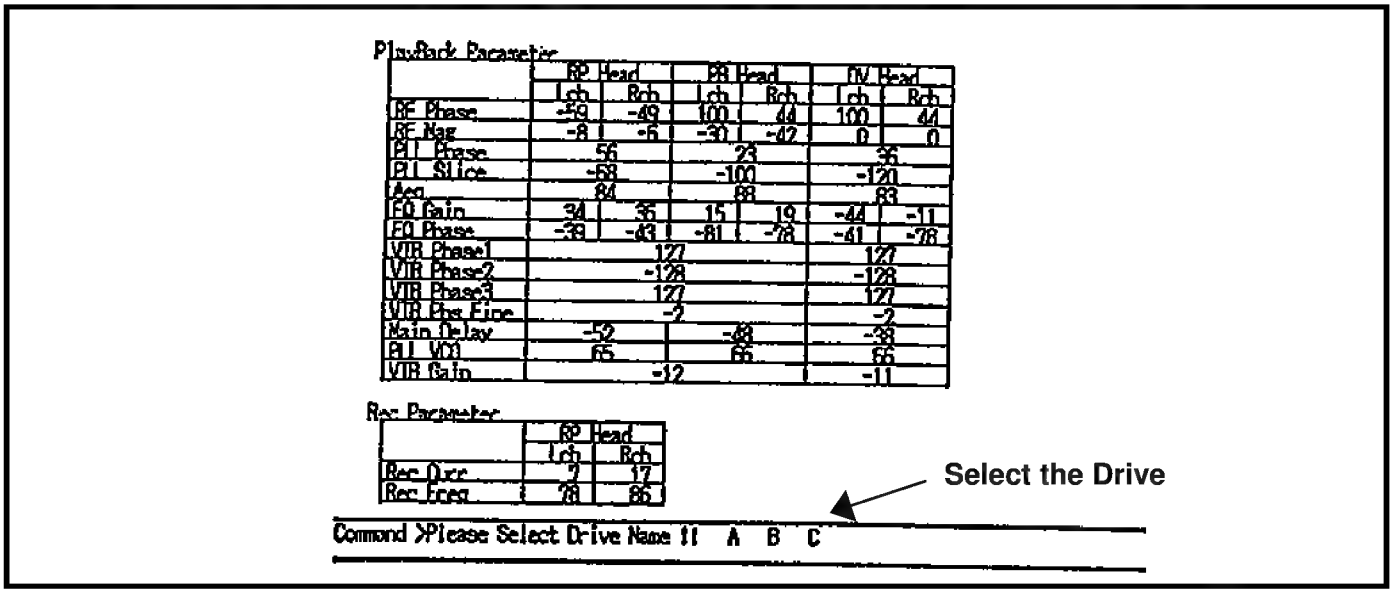
RF Adjustment result data and error rate data can be saved.

1. Return to MAIN Menu from Recording Adjustment menu.
2. The procedures are show below.



Command>Please Select No!!!!

3. item 3 is EVR data loading, item 4 is EVR data saving and item 5 is Error rate data saving.



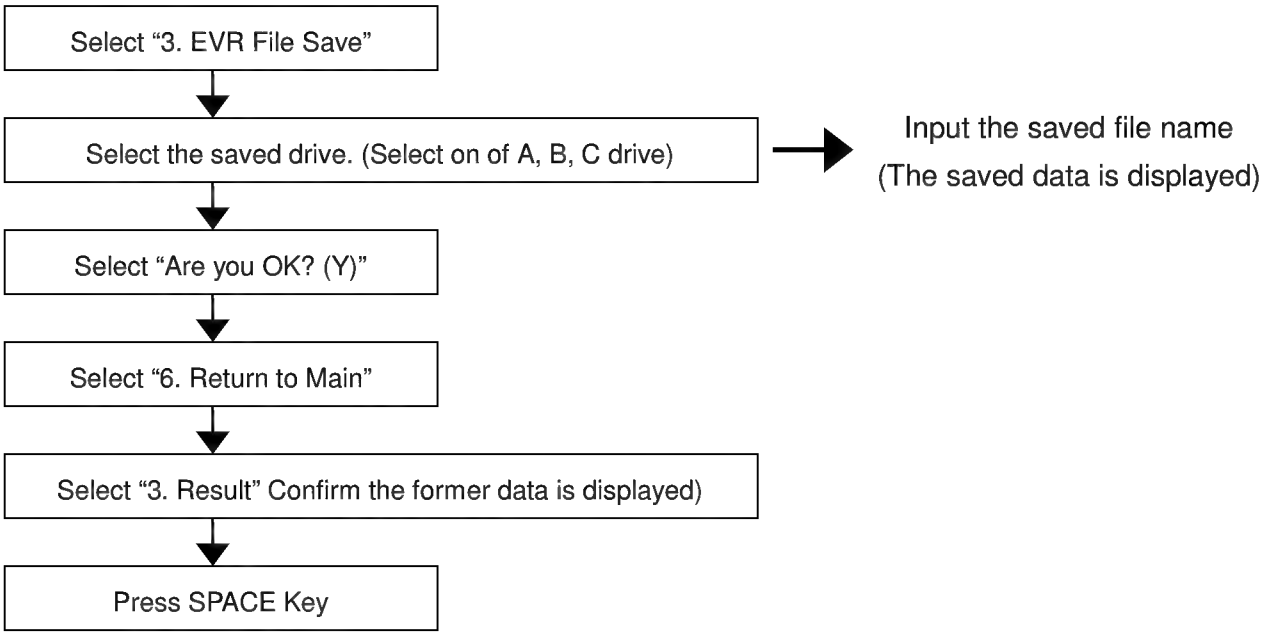
<< EVR File Save >>

1. Select “4. EVR File Save”. All parameters are displayed and select the drive for data saving.
2. Enter the file name and comment after selecting the drive. File name must be in 8 characters, and comment is must be in 20 characters. The adjustment data for VTR can be managed same as linearity data. After enter the File name and comment, Sub-menu is automatically displayed. Then save the EVR data.

<< EVR File Load >>

1. Select “3. EVR File Load (DISK) for reading the EVR data from PC.
2. Select the drive follow the screen message input the saved filename, then EVR data displayed on the screen.
3. When escape from this EVR data display, press “Y” key follow the message “Are You OK“, then return to Sub-menu (File selected menu)

Sub-menu after item 7


Select “3. EVR File Save”
Select the saved drive. (Select on of A, B, C drive)
Input the saved file name
(The saved data is displayed)
Select “Are you OK? (Y)”
Select “6. Return to Main”
Select “3. Result” Confirm the former data is displayed)
Press SPACE Key

<< Save the Error Data >>

1. Displayed PB Auto Menu as the same as step of introduction <<Save and Reading the EVR Data>>.
2. Select “5. ERR File Save“ on the PB Auto menu.
3. The Error rate data is saved to same directly as AUTO EQ software, which is file “ERRDATA.DAT” Therefore it file can only entry the comment.
4. After input comment, Auto EQ software is executed saving operation and return to PB Auto menu.

<< Load the Error Data >>

1. The saved Error data file read on the Editor after return to Dos mode.
2. The contents of Error data file, which display from left side on the screen “date of saving (month/day/year), comment and error data.”.
3. Order to display of Error data from left side, which display as numerical value of upper left (PRO PB MASTER – Audio L) on the error rate table of Auto EQ software display and next to right numerical value displayed. And next row of numerical value (PRO RP MASTER – Audio L) displayed from left to right direction. Therefore most of right side of numerical value on Editor display, which is numerical value of “PRO Self Play – Video R”.

<< EVR Up Load >>

When EVR file data load to VTR from PC. First EVR file load have to executed follow the procedure on previous page.

1. Select the item “2 EVR UP Load” and press “U” Key follow the message “(D)efault or (U)ser Data Up Load”.
2. After press “U” button appear the message “Up Load Complete!! Are You OK? [(Y)es or (N)o]”, then press (Y) button for up load EVR data to VTR.

<< EVR Down Load >>

Note: The EVR data keep on EQ software until escape DOS mode after Auto EQ adjustment finished. Therefore if you want to save EVR data without execute Auto EQ adjustment, necessary EVR Down Load operation.

1. Select the item "2.EVR Down Load“ and press “U” Key follow the message “(D)efault or (U)ser Down Load”.
2. After press “U” button appear the message “Down Load Complete!! Are You OK? [(Y)es or (N)o]”, then press (Y) button for EVR data down load to PC from VTR.

After finish EVR Down Load, perform “EVR File Save” for file save to disk drive follow the follow the procedure on previous page.

5-2. MANUAL ADJUSTMENT PROCEDURE

NOTE: Setting of Service Menu corresponds to setting of Front switches. (Refer to Error Rate Confirmation Procedure on Section 2.)

RF ADJUSTMENT

5-2-1. Pre EQ Adjustment

BOARD	RF AMP board (H4)
SPEC.	2.5VDC ± 0.2V(DVCPRO) 2.0+0.5V(DV)
TEST	TP20, TP18,TP1 and TP2 (Trigger)
ADJUST	C09:RP MAG L, C10:RP MAG R, C13:PB MAG L, C14:PB MAG R (EVR on RF ADJUST menu)
MODE	PLAY
TAPE	DV Alignment tape (NTSC: VFM3010EDS, PAL: VFM3110EDS) DVCPRO Alignment tape (NTSC: VFM3580KM, PAL: VFM3680KM)
M.EQ	Oscilloscope Monitor TV (Connect to VIDEO 3 OUT)

1. Open the RF ADJUST menu on the Service Menu.
2. Connect the Scope to TP1 for trigger.
3. Connect the Scope to TP20 with 10:1 probe and connect the ground to TG9.
4. Playback a colour bar portion of the DV Alignment Tape.
5. Adjust EVR "C09:RP MAG L" and "C10:RP MAG R" so that the DC voltage is become 2.0V+0.5V.
6. Playback a colour portion of DVCPRO Alignment Tape.
7. Adjust EVR "C09:RP MAG L" and "C10:RP MAG R" so that the DC voltage is become 2.5V+0.5V.
8. Connect the scope to TP18 with 10:1 probe and connect the ground to TG9.
9. Connect the scope to TP2 for trigger.
10. Adjust EVR "C13:PB MAG L" and EVR "C14:PB MAG R" so that the DC voltage is become 2.0V+0.5V.

Note: How to adjust the EVR.

(1) Press the MENU button on the front bottom panel, then "Service Menu" appeared on the screen.
(2) Select the item " C00: RF ADJUST " by JOG Dial and press the SET button on the front bottom panel then open " RF ADJUST " menu.
(3) Select the adjustment item by JOG Dial, then move The start mark (*) to the adjusting item.
(4) Adjustment became available by pressing JOG/SHTL button, then rotating JOG Dial.

5-2-2. RF AMP PB Phase Adjustment

BOARD	RF AMP board (H4)
SPEC.	Minimum of Error Rate
TEST	Front Display
ADJUST	C07:RP PHASE L, C08:RP PHASE R C11:PB PHASE L, C12:PB PHASE R (EVR on RF ADJUST menu)
MODE	PLAY
TAPE	DV Alignment tape (NTSC: VFM3010EDS, PAL: VFM3110EDS) DVCPRO Alignment tape (NTSC: VFM3580KM, PAL: VFM3680KM)
M.EQ	Monitor TV (Connect to VIDEO 3 OUT)

1. Set the switches as shown below
   Front Bottom CF:4F
2. Open the RF Adjust menu on the Service menu and set as follows.

C20	ERROR MODE	FAST
C19	PB MODE	RP H
C18	VITERBI MODE	ON
C17	CONCEAL MODE	OFF
C16	ECC MODE	AL OFF

3. Playback the DV colour bar portion of Alignment Tape.
4. Adjust EVR "C07: RP PHASE L" and "C08:RP PHASE R" so that the error rate is minimum.
5. Playback the colour bar portion of DVCPRO Alignment tape.
6. Adjust EVR "C07:RP PHASE L" and "C08:RP PHASE R" so that the error rate is minimum.
7. Set the item "C19:PB MODE" to PB H.
8. Adjust "C11:PB PHASE L" and "C12:PB PHASE R" so that the error rate is minimum.

5-3. EQ ADJUSTMENT

5-3-1. PLL Lock Adjustment (PB)

BOARD	EQ Board (H3)
SPEC.	----------
TEST	TP403, Monitor
ADJUST	VR410, B01:PB PLL PHASE, B02:PB PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV Oscilloscope

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service Menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape and confirm the picture is appeared on the monitor.
4. If picture is not appeared, adjust following items
   (1) Connect the scope to TP403 and adjust VR410 so that the DC voltage is become 2.1VDC.
   (2) Adjust "B01:PB PLL PHASE" and "B02:PB PLL SLICE" so that the picture appears on the monitor.
5. Repeat STOP to PLAY mode, and confirm the Picture is surely appeared every time.

5-3-2. PLL Latch Phase Coarse Adjustment (PB)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B01:PB PLL PHASE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B01:PB PLL PHASE" so that the video error rate becomes minimum.

5-3-3. PLL Slice Level Coarse Adjustment (PB)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B02:PB PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B02:PB PLL SLICE" so that the video error rate becomes minimum.

5-3-4. EQ Adjustment (1) (PB)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B19:PB MAIN DL (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B19:PB MAIN DL" so that the video error rate is minimum.

5-3-5. EQ Adjustment (2) (PB)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B03:PB AEQ, B04:PB GAIN L, B05:PB PHASE L, B06:PB GAIN R, B07:PB PHASE R (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust each adjustment item so that the each portions error rate becomes minimum as shown in the table.

Procedures	Adjust VR	Error Rate Portion
1	PB AEQ	VIDEO R & L CH
2	PB GAIN L	VIDEO L CH
3	PB PHASE L	VIDEO L CH
4	PB GAIN R	VIDEO R CH
5	PB PHASE R	VIDEO R CH

5-3-6. PLL Latch Phase Fine Adjustment (PB)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B01:PB PLL PHASE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B01:PB PLL PHASE" so that the video error rate becomes minimum.

5-3-7. PLL Slice Level Fine Adjustment (PB)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B02:PB PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B02:PB PLL SLICE" so that the video error rate becomes minimum.

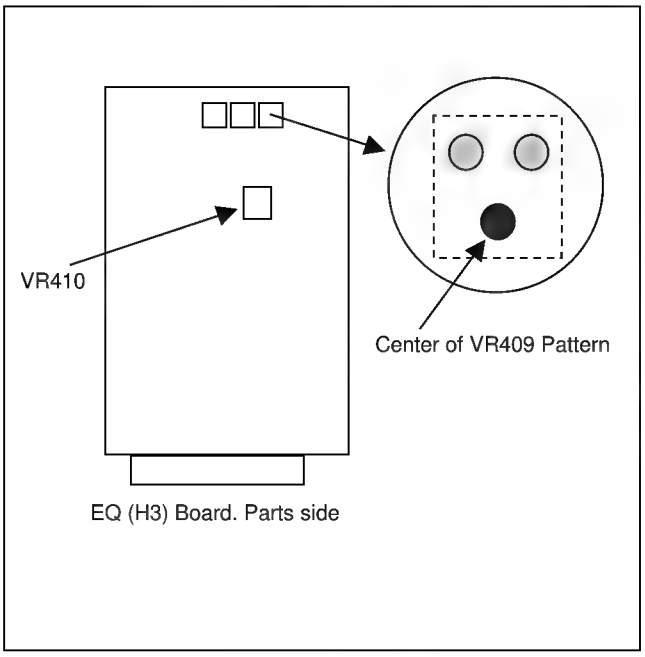
5-3-8. Viterbi A/D Input Level Adjustment

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Center of VR409 pattern Error Rate Level Meter (Front display)
ADJUST	B23:VITABI GAIN, VR801, (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	ON
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B23:VTB GAIN" so that the video error rate becomes minimum.
5. Connect the Electric Volt Meter to " Center of VR409 Pattern " as shown as below figure and confirm the DC voltage is 2.1V DC to 2.4VDC. If it is not, adjust VR801.



5-3-9. PLL Lock Adjustment (R/P)

BOARD	EQ Board (H3)
SPEC.	----------
TEST	TP203, Monitor TV
ADJUST	VR210, B08:RP PLL PHASE, B09:RP PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape and confirm the picture appears on the monitor.
4. If the picture is not appeared adjust following items.
   (1) Connect the Electric Volt Meter to TP203 and adjust VR210 so that the DC voltage is 2.1VDC.
   (2) Adjust "B08:RP PLL PHASE" and "B09:RP PLL SLICE so that the picture appears on the monitor.
5. Repeat STOP to PLAY and confirm the picture is surely appeared.

5-3-10. PLL Latch Phase Adjustment (R/P)

BOARD	EQ Board (H3)
SPEC.	Error Rate minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B08:RP PLL PHASE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B08:RP PLL PHASE" so that the video error rare is minimum.

5-3-11. PLL Slice Level Adjustment (R/P)

BOARD	EQ Board (H3)
SPEC.	Error Rate minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B09:RP PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B09:RP PLL SLICE" so that the video error rare is minimum.

5-3-12. EQ Adjustment (1) (R/P)

BOARD	EQ Board (H3)
SPEC.	Error Rate minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B20:RP MAIN DL (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B20:RP MAIN DL" so that the video error rare is minimum.

5-3-13. EQ Adjustment (2) (R/P)

BOARD	EQ Board (H3)
SPEC.	Error Rate minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B10:RP AEQ, B11:RP GAIN L, B12:RP PHASE L, B13:RP GAIN R B14:RP PHASE R (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode on VTR.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust the each EVR so that the error rate is minimum.

Procedures	Adjust VR	**Correspond of Error Rate Portion**
1	RP AEQ	VIDEO R & L CH
2	RP GAIN L	VIDEO L CH
3	RP PHASE L	VIDEO L CH
4	RP GAIN R	VIDEO R CH
5	RP PHASE R	VIDEO R CH

5-3-14.PLL Latch Phase Fine Adjustment (R/P)

BOARD	EQ Board (H3)
SPEC.	Error Rate minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B08:RP PLL PHASE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode on VTR.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust RP PLL PHASE so that the error rate is minimum.

5-3-15. PLL Slice Level Fine Adjustment (R/P)

BOARD	EQ Board (H3)
SPEC.	Error Rate minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B09:RP PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	NTSC: VFM3580KM PAL: VFM3680KM
M.EQ	Monitor TV

1. Set the Error Rate display mode on VTR.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B09:RP PLL SLICE" so that the error rate is minimum.

5-3-16. PLL Lock Confirmation (Consumer DV)

BOARD	EQ Board (H3)
SPEC.	----------
TEST	Monitor TV
ADJUST	B02:PB PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	(Consumer DV Alignment Tape) NTSC:VFM3010EDS, PAL:VFM3110EDS
M.EQ	Monitor TV

1. Set the Error Rate display mode on VTR.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape and confirm the picture appears on the monitor.
   If picture is not appeared adjust "B02:PB PLL SLICE." so that the picture appears on the monitor.
4. Repeat STOP to PLAY and confirm the picture is surely appeared.

5-3-17. PLL Slice Level Coarse Adjustment (Consumer DV)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B02:PB PLL SLICE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	(Consumer DV Alignment Tape) NTSC:VFM3010EDS, PAL:VFM3110EDS
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust “B02:PB PLL SLICE”, so that the video error rate is minimum.

5-3-18. EQ Adjustment (1) (Consumer DV)

BOARD	EQ (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B19:PB MAIN DL (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	(Consumer DV Alignment Tape) NTSC:VFM3010EDS, PAL:VFM3110EDS
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust “B19:PB MAIN DL” so that the video error rate is minimum.

5-3-19. EQ Adjustment (2) (Consumer DV)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B03:PB AEQ, B04:PB GAIN L, B05:PB PHASE L, B06:PB GAIN R, B07:PB PHASE R (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	(Consumer DV Alignment Tape) NTSC:VFM3010EDS, PAL:VFM3110EDS
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust each EVR so that the error rate is minimum.

Procedures	Adjust VR	Correspond of Error Rate Portion
1	PB AEQ	VIDEO R & L CH
2	PB GAIN L	VIDEO L CH
3	PB PHASE L	VIDEO L CH
4	PB GAIN R	VIDEO R CH
5	PB PHASE R	VIDEO R CH

5-3-20. PLL Slice Level Fine Adjustment (Consumer DV)

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B08:PB PLL PHASE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	(Consumer DV Alignment Tape) NTSC:VFM3010EDS, PAL:VFM3110EDS
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	RP H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Adjust "B08:PB PLL SLICE" so that the video error rate becomes minimum.

5-3-21. Consumer DV Viterbi Confirmation

BOARD	EQ Board (H3)
SPEC.	Error Rate Minimum
TEST	Error Rate Level Meter (Front display)
ADJUST	B23:VTB GAIN, B01:PB PLL PHASE (EVR on EQ ADJUST menu)
INPUT	----------
MODE	PLAY
TAPE	(Consumer DV Alignment Tape) NTSC:VFM3010EDS, PAL:VFM3110EDS
M.EQ	Monitor TV

1. Set the Error Rate display mode.
2. Open the EQ ADJUST menu on Service menu and set as follows.

B28	ERROR MODE	FAST
B27	PB MODE	PB H
B26	VITERBI MODE	OFF
B25	CONCEAL MODE	OFF
B24	ECC MODE	AL OFF

3. Playback the Alignment tape.
4. Confirm the error rate is improved by Viterbi on. The improvement can be confirmed by the error rate meter decrease 5 scale on the front audio meter.
5. If the error rate is not improved so much, adjust "B23:VTB GAIN" and "B01:PB PLL PHASE".

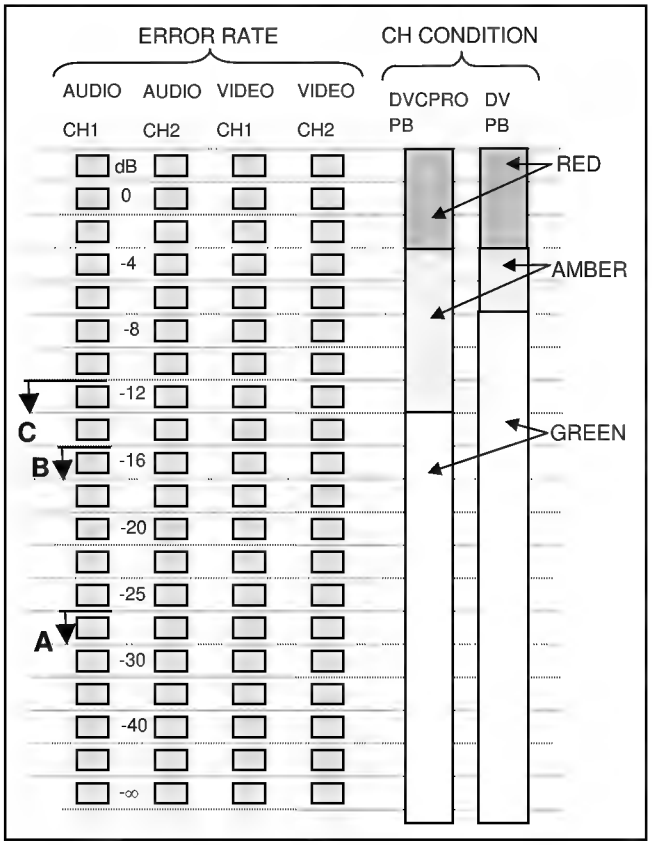
5-3-22.Final confirmation of Error Rate.

BOARD	EQ Board (H3)
SPEC.	DVCPRO (PB mode) : under the A DVCPRO (Confi mode) :under the C DV (PB mode) : under the B
TEST	Error Rate Level Meter (Front display)
MODE	PLAY, REC
TAPE	(DVCPRO Alignment Tape) NTSC: VFM3580KM, PAL: VFM3680KM (Consumer DV Alignment Tape) NTSC:VFM3110EDS, PAL:VFM3110EDS Blank Tape
M.EQ	Monitor TV

1. Set the Error Rate display mode
2. Open the EQ ADJUST menu on Service menu and set as follows.

ITEM of the MENU	DVCPRO	DV
B28: ERROR MODE	FAST	FAST
B27: PB MODE	PB H	RP H
B26: VITERBI MODE	ON	ON
B25: CONCEAL MODE	ON	ON
B24: ECC MODE	AL OFF	AL OFF

Confirm that the Error rate in specification, on DVCPRO playback, REC(confi) and DV playback mode.



5-4. REC AMP Board

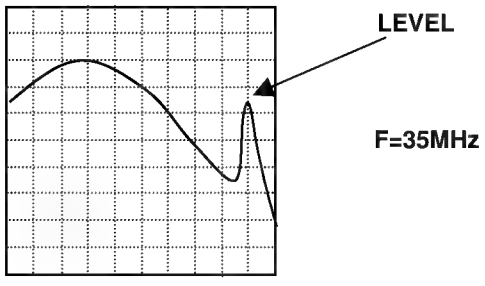
5-4-1. REC Current, Frequency Characteristic Adjustment

BOARD	RF AMP (H4)
SPEC.	----------
TEST	TP17,TG7 (GND), TP2 (TRIG)
ADJUST	C01:REC CURR L, C03:REC CUR R C02:REC FREQ L, C04:REC FREQ R (EVR on RF ADJUST menu) VC600,VC601
INPUT	100% Colour bar
MODE	PLAY, REC / PLAY
TAPE	NTSC: VFM3580KM, PAL: VFM3680KM Blank Tape
M.EQ	Spectrum Analyzer / Monitor TV (Connect to VIDEO 3 OUT)

1. Connect the trigger of spectrum Analyzer at TP2 and connect the Spectrum Analyzer in at TP17 with 50ohm coaxial cable (Use GND at TG7).
2. Set the Error Rate display mode.
3. Open the RF ADJUST menu on Service menu and set as follows.

C20	ERROR MODE	FAST
C19	PB MODE	PB H
C18	VITERBI MODE	ON
C17	CONCEAL MODE	OFF
C16	ECC MODE	AL OFF

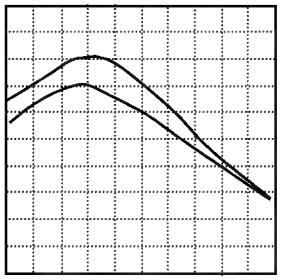
4. Playback the Alignment tape and Store the waveform on the spectrum Analyzer in TRACE-A.
5. Eject the Alignment tape and insert a Blank tape and record a colour bar 100% signal.



6. Set the TRACE-B mode on Spectrum Analyzer and Adjust VC600 and VC601 so that the peak level of 35MHz portion is minimum.
7. Adjust "C01:REC CUR L" and "C03:REC CUR R" so that the level of 5MHz portion is become –4dB±0.5dB per the waveform of TRACE-A.
8. Adjust "C02:REC FREQ L" and "C04:REC FREQ R" so that the level at 20MHz portion is become maximum.

POINT: Set the confidence playback level is lower less than level of TRACE-A and increase the gain gradually by Search Dial so that the level is maximum.
Please set the adjustment value in the first place the level is become maximum.

9. Confirm that the error rate is less than –12dB digit on the level meter.(Refer to item 5-3-22)
10. If the level of TRACE-B is not same as TRACE-A, confirm that the level of TRACE-B is within 0 to –2dB against TRASE-A (spec: 0 to –2dB).
11. Record for one minute keeping the above condition. Then playback the just recorded potion and confirm the error rate is same or better than DVCPRO playback (Refer to item 5-3-22 : equivalent level of DVCPRO Alignment tape playback).



■ ITEM PARAMETER

REF. LEVEL	-25dB
ATT	10dB
DIV	5dB/DIV
START FREQUENCY	0KHz
STOP FREQUENCY	40MHz
RES VW	1MHz
VBW	3KHz
SWEEP	300msec
TRIGGER	EXT (HEAD SW)

5-4-2. Rotary Erase Current Adjustment

BOARD	RF AMP (H4)
SPEC.	1.0 ± 0.12V
TEST	TP11, TP12
ADJUST	VR13, VR14
INPUT	100% Colour Bar
MODE	REC / PLAY
TAPE	Blank Tape
M.EQ	Oscilloscope

1. Insert a REC/PLAY tape auto record a 100% colour bar signal.
2. Connect a scope to TP11 with 10:1 probe and adjust VR 13 (RE A) so that the DC level is in the specification (1.0V ± 0.12V).
3. Then connect the scope to TP12 and adjust VR14 (RE B) so that the DC level is in the specification (1.0V ± 0.12V).

6. REC PB

6-1. PLL Lock DC Level Adjustment

P.C.B.	REC PB (F5)
SPEC.	0.0V ± 0.2V
TEST	TP170
ADJ.	VC170
INPUT	----------
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, Monitor TV

1. Adjust VC170 so that the DC level is in specification.

Note:
Confirm that the colour bar picture has no noise by watching the monitor TV.

6-2. Audio VCO Center Freq. Adjustment

P.C.B.	REC PB (F5)
SPEC.	48kHz Mode : 48.00kHz ± 0.1kHz 44kHz Mode : 44.10kHz ± 0.1kHz 32kHz Mode : 32.00kHz ± 0.1kHz
TEST	TP460
ADJ.	VR460 (48kHz), VR461 (44kHz), VR462 (32kHz)
INPUT	----------
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, Frequency Counter, Monitor TV

1. Open the "E00:AUDIO ADJUST" menu on the Service Menu.
2. Select the item "E06:A VCO ADJ" and it setting follow the adjustment frequency as indicated as below procedure..

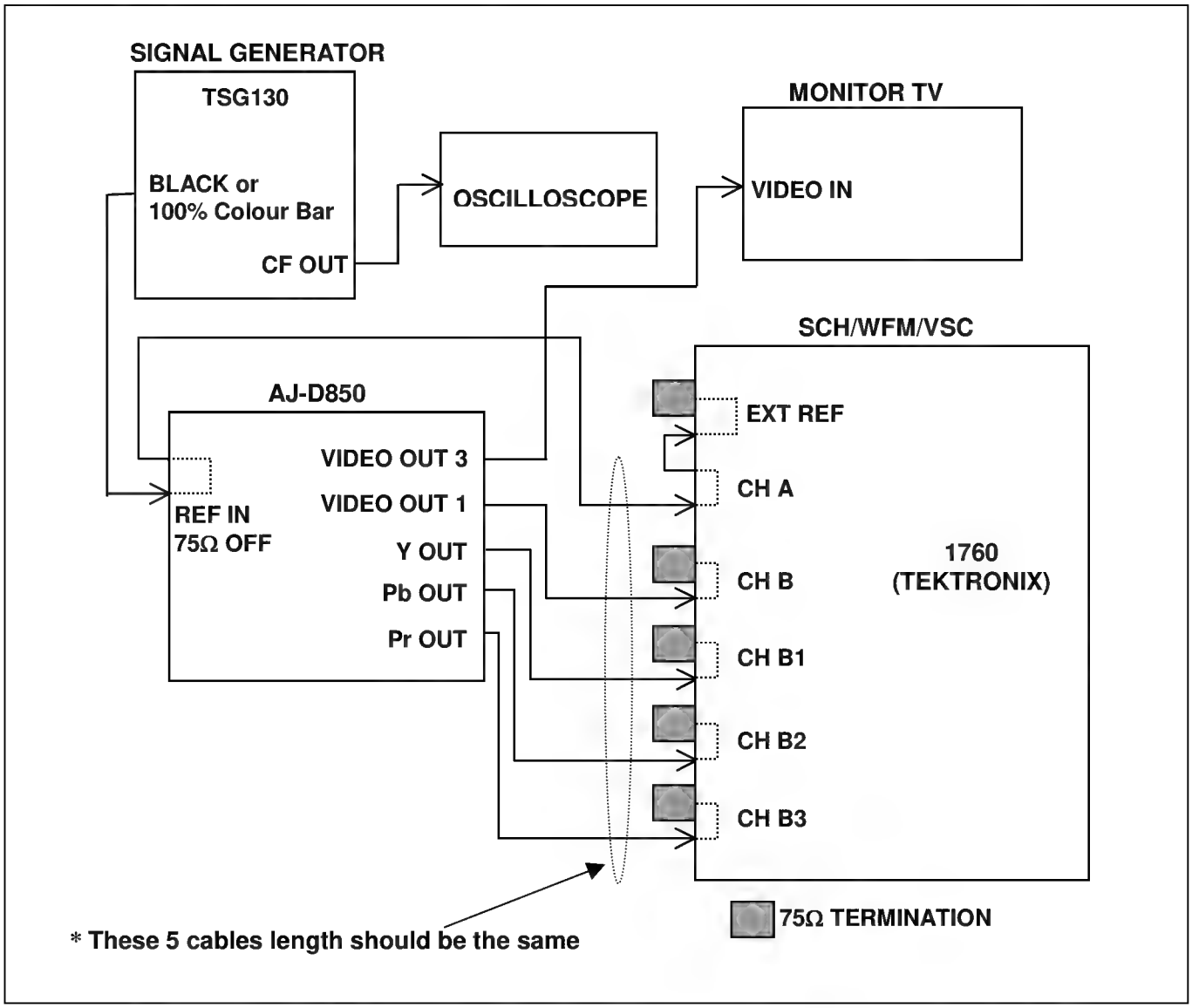
E06	: A VCO ADJ	48kHz
E06	: A VCO ADJ	44kHz
E06	: A VCO ADJ	32kHz

3. Set the item " E06:A VCO ADJ" to 48kHz and adjust VR460 so that the frequency is 48.00kHz ± 0.1kHz.
4. Set the item " E06:A VCO ADJ" to 44kHz and adjust VR461 so that the frequency is 44.10kHz ± 0.1kHz.
5. Set the item " E06:A VCO ADJ" to 32kHz and adjust VR462 so that the frequency is 32.00kHz ± 0.1kHz.
6. Finally, close the Service Menu.

7. Video Out P. C. Board (F4) [FOR NTSC ONLY]

Please warm up the VTR about 10 minute before adjustment.

CONNECTION



7-1. REF PLL Center Adjustment

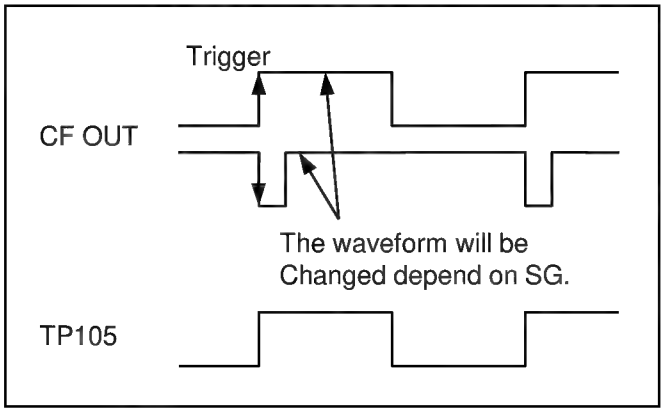
P.C.B.	V_OUT (F4)
SPEC.	0V ± 0.1VDC
TEST	TP70 (D-1)
ADJ.	VC70 (D-1)
INPUT	EXT REF IN: Composite 75% Color Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

1. Adjust VC70 so that the voltage is 0V ± 0.1VDC.

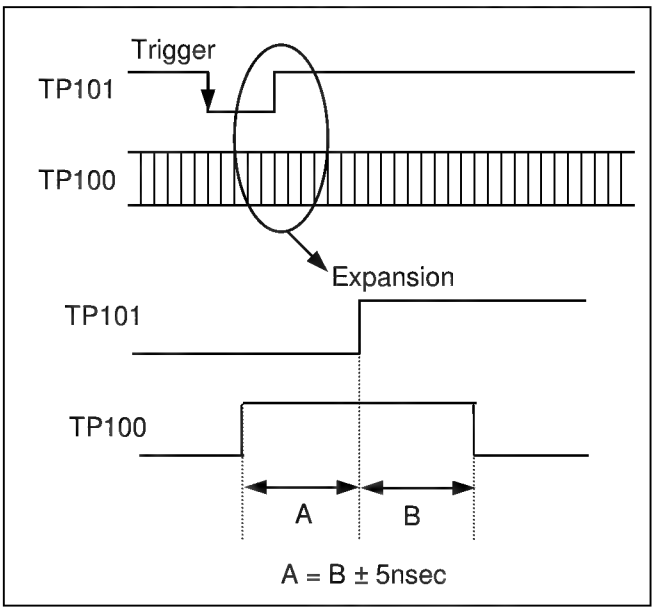
7-2. REF CF Detection Adjustment

P.C.B.	V_OUT (F4)
SPEC.	See Figure, A = B ± 5%
TEST	TP105 (E-4), CF Out of Signal SG TP100 (E-1), TP101 (E-1)
ADJ.	VR100 (C-1)
INPUT	EXT REF IN: Composite 75% Color Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

1. Connect the oscilloscope CH1 to the CF output of composite signal generator and CH2 to TP105.
2. Adjust VR100 so that the phase is synchronized between CF pulses and TP105 as shown in figure.



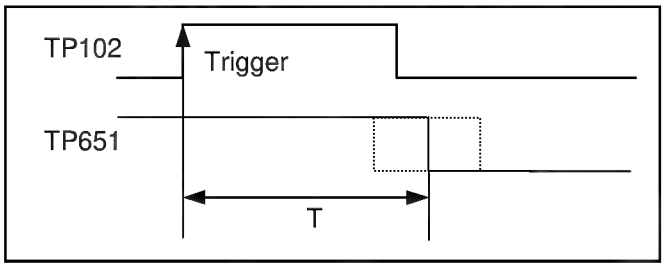
3. Connect the oscilloscope CH1 to TP101 and CH2 to TP100.
4. Expand (delay) the rising edge of TP100.
5. Slowly and slightly rotate VR100 so that the rising edge of TP101 is positioned at the center of cross point between A and B of waveform at TP100.



7-3. Ref. H Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	T = 5.3 ± 0.1us
TEST	TP102 (E-1), TP651 (F-2)
ADJ.	VR101 (C-1)
INPUT	EXT REF IN: Composite 75% Color Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

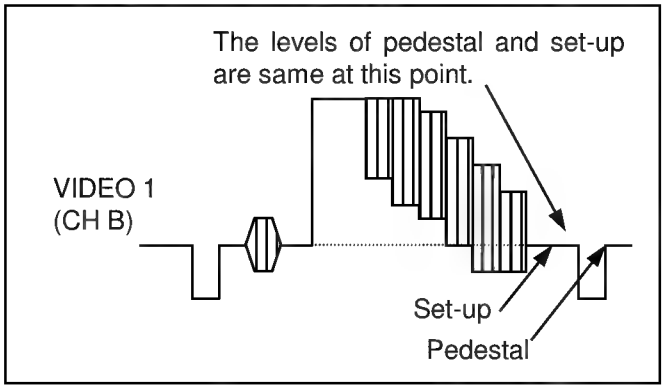
1. Connect the oscilloscope CH1 to TP102 and CH2 to TP651.
2. Adjust VR101 so that the timing of the pulses at TP651 and TP102 is as shown in below.



7-4. Composite Set-up Adjustment

P.C.B.	V_OUT (F4)
SPEC.	Set-up Level = Pedestal Level ± 1RE
TEST	VIDEO OUT 1
ADJ.	VR902 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

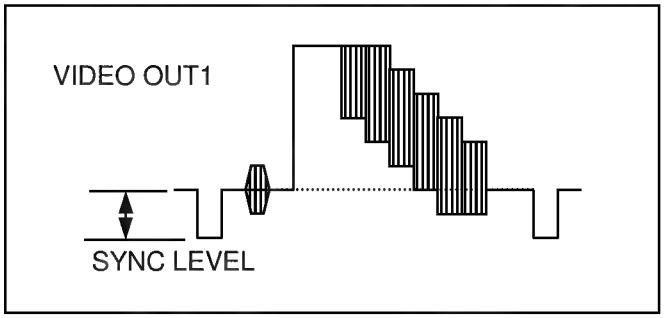
1. Open the VIDEO ADJUST menu on Service Menu and set item “D08: V SETUP” to ON.
2. Set the item “613:V IN SETUP” and “614:V OUT SETUP” to “THRU” on SET UP menu.
3. Adjust VR902 so that the set-up level is the same level as the pedestal level.



7-5. Sync Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	40IRE ± 1%
TEST	VIDEO OUT 1
ADJ.	VR950 (F-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

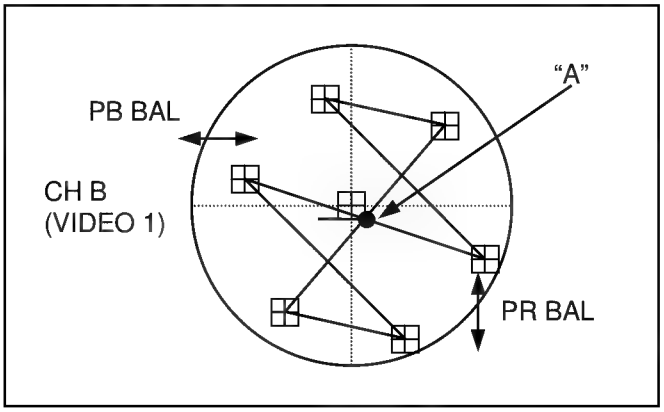
1. Adjust VR950 so that the Sync Level is 40IRE ± 1%.



7-6. Carrier Balance Adjustment

P.C.B.	V_OUT (F4)
SPEC.	Cross point “A” at the center of scope.
TEST	REF IN (CH A), VIDEO OUT 1(CH B)
ADJ.	VR806 (H-1), VR807 (H-1)
INPUT	EXT REF IN
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Vector Scope

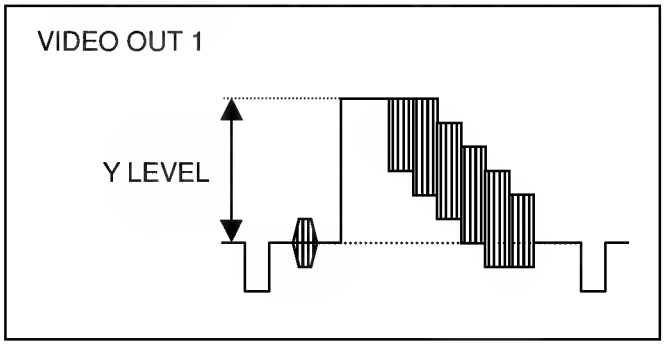
1. Adjust VR806 (PB BAL) and VR807 (PR BAL) so that the cross point “A” is positioned at the center of the vector scope.



7-7. Composite Y Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	100IRE ± 1%
TEST	VIDEO OUT 1
ADJ.	VR900 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

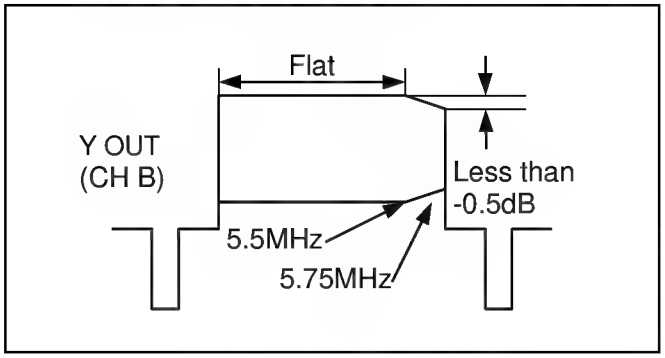
1. Adjust VR900 so that the Y level is 100IRE ± 1%.



7-8. Composite Y Frequency Response Adjustment

P.C.B.	V_OUT (F4)
SPEC.	5.5MHz = Less than –0.5dB
TEST	Y OUT
ADJ.	VR901 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (H-Sweep portion)
M.EQ	Waveform Monitor

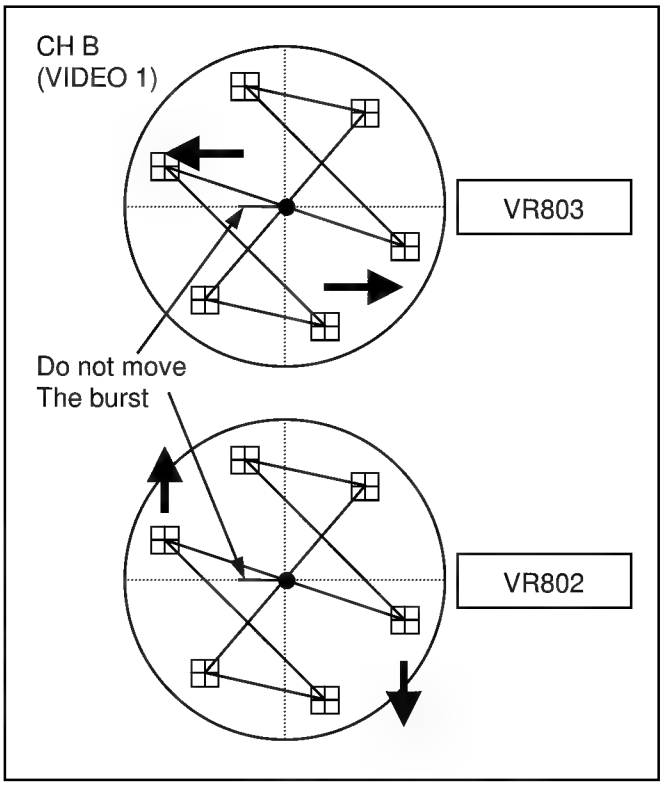
1. Adjust VR901 so that the frequency response becomes flat.
   a) The level of 5.5MHz portion is less than –0.5dB.
   b) The middle frequency is flat.

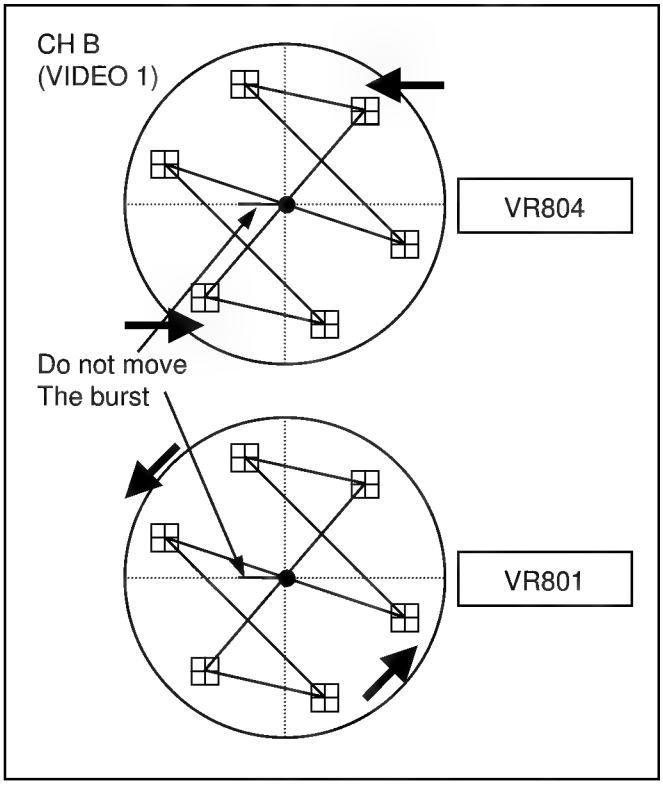


7-9. Vector Adjustment

P.C.B.	V_OUT (F4)
SPEC.	All vectors are in the Inner Boxes
TEST	VIDEO OUT 1
ADJ.	VR801 (H-1), VR802 (I-1) VR803 (H-1), VR804 (I-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Vector Scope

1. Set the burst position on the Vector Scope at correct position.
2. Adjust the following VR's so that the color bar's each vector points are in the square mark on the vector scope.
   - VR804 : Quad Phase
   - VR801 : Hue Phase
   - VR803 : Encode PB Level
   - VR802 : Encode PR Level

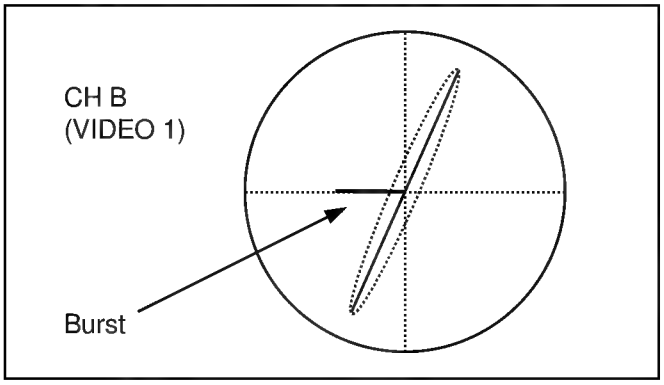




7-10. Composite Pb/Pr Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec
TEST	VIDEO OUT 1
ADJ.	VR703 (H-3)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (Bowtie portion)
M.EQ	Vector Scope

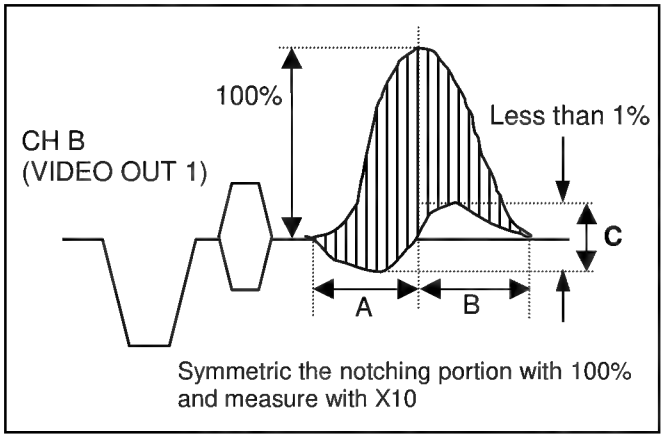
1. Adjust VR703 so that the signal on the vector scope becomes 1 straight lines (X) as shown in figure.



7-11. Composite Y/C Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec (C = less than 1%)
TEST	VIDEO OUT 1
ADJ.	VR903 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (Pulse Bar portion)
M.EQ	Waveform Monitor

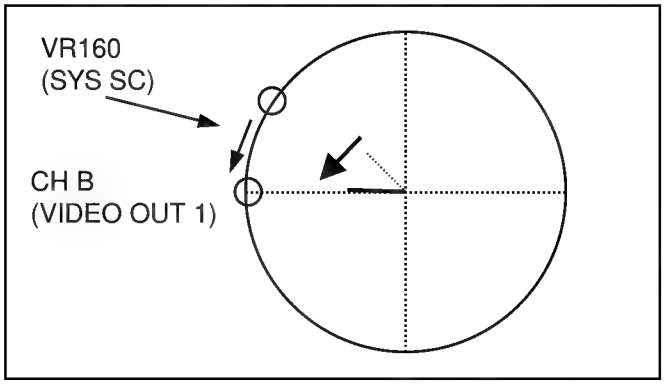
1. Adjust VR903 so that the portion A and B are become symmetric left and right and level of portion C less than 1% against level of waveform 100% as shown in figure.
2. When performing this adjustment, the level of waveform may be changed. Therefore, level of waveform is adjusted by Chroma VR on the front panel during this adjustment.
3. After finish this adjustment set the Chroma VR to preset position.
4. After completion of this adjustment, "6-12. Sub-Carrier Phase Adjustment" should be performed.



7-12. Sub-Carrier Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 1degree
TEST	VIDEO OUT 1, REF IN
ADJ.	VR160 (C-1)
INPUT	REF IN: Composite 75% Color Bar
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	SCH Meter

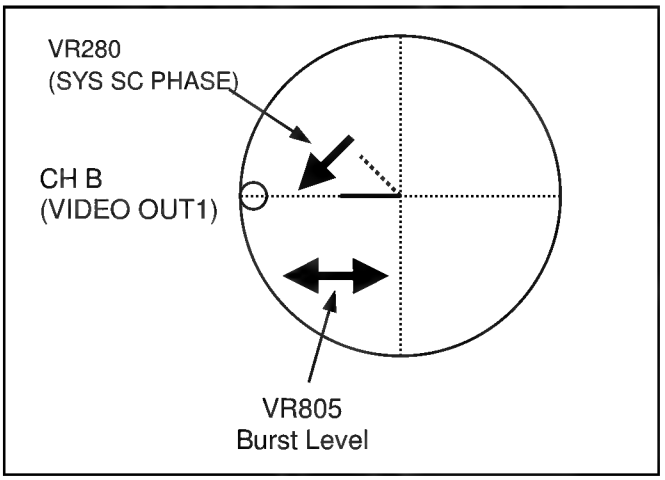
1. Adjust VR160 so that the SCH of VIDEO OUT is same as EXT-REF-IN, then SCH phase should be become 0 ± 1 degree.

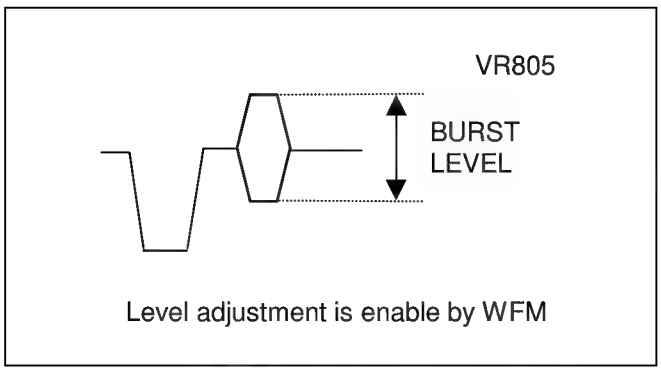


7-13. Burst Adjustment

P.C.B.	V_OUT (F4)
SPEC.	PHASE: 0 ± 1degree LEVEL: 40 ± 0.4IRE
TEST	VIDEO OUT 1
ADJ.	VR280 (C-1), VR805 (I-1)
INPUT	REF IN: Composite 75% Color Bar
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	SCH Meter

1. Adjust VR280 while changing the channels A and B of the SCH meter alternately so that the SCH is 0 degree.
2. Adjust VR805 while changing the channels A and B of the SCH meter alternately so that the burst level and burst phase are become same between VIDEO 1 OUT(CHB) and REF(CHA),then burst level is should be become 40 ± 0.4IRE.

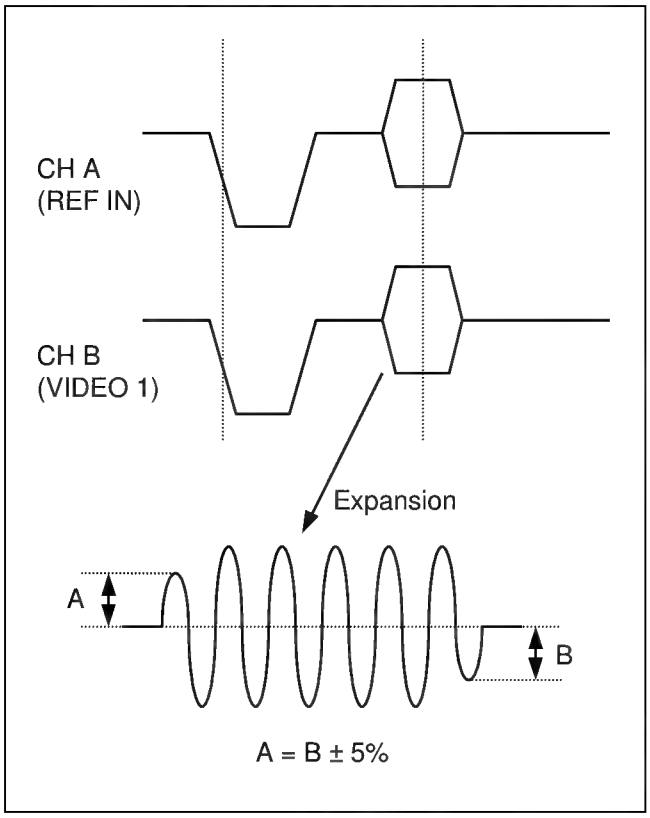




7-14. Burst Position Adjustment

P.C.B.	V_OUT (F4)
SPEC.	A = B ± 5%
TEST	VIDEO OUT 1, REF IN
ADJ.	VR201 (A-1)
INPUT	REF IN: Composite 75% Color Bar
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

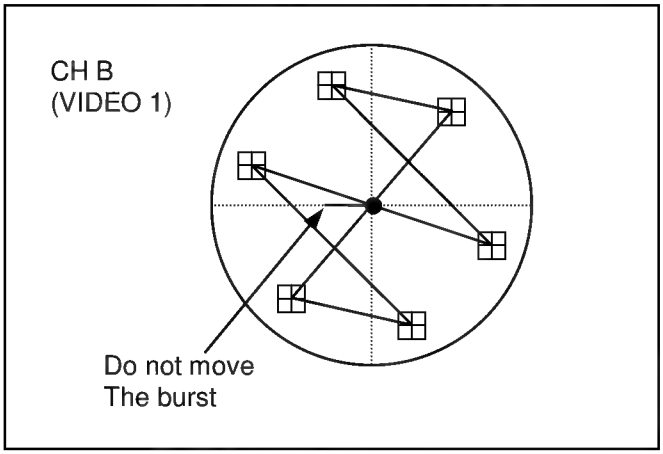
1. Adjust VR201 while changing the channels A and B of the vector scope alternately so that the center of the burst of the reference and VIDEO OUT 1 are phase synchronized and level difference between A and B portion in specification.



7-15. Confirmation of Vector

P.C.B.	V_OUT (F4)
SPEC.	All vectors are in the Inner Boxes
TEST	VIDEO OUT 1
ADJ.	VR801 (H-1), VR803 (H-1) VR802 (I-1), VR800 (H-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Vector Scope

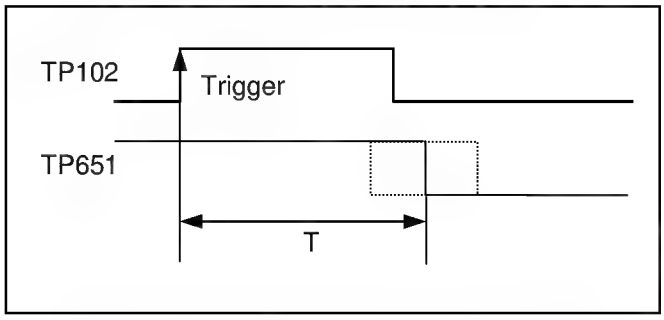
1. Set the burst position on the Vector Scope at correct position.
2. Confirm that the color bar's each vector points are in the square mark on the vector scope.
3. If out of specification, adjust the following VR's so that the color bar's each vector points are in the square mark on the vector scope.(Refer to item 7-9. Vector Adjustment).
   - VR804 : Quad Phase
   - VR801 : Hue Phase
   - VR803 : Encode PB Level
   - VR802 : Encode PR Level



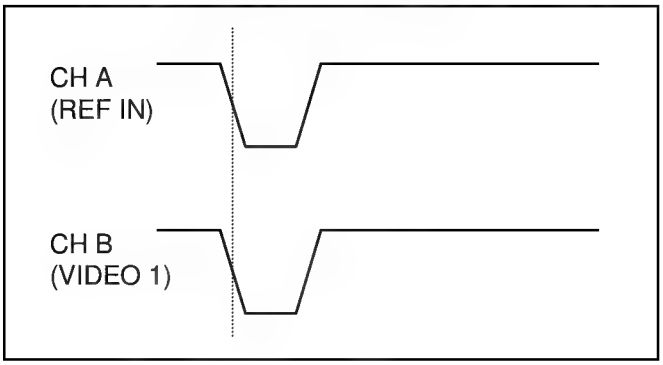
7-16. Component Ref. H & Sub-Carrier Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	T = 5.3 ± 0.1usec 0 ± 10nsec
TEST	TP102, TP651 VIDEO OUT 1 , EXT REF IN
ADJ.	VR102 (C-1)
INPUT	REF IN : 75% Color Bar (without burst: Component Y)
MODE	EE
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Oscilloscope, Waveform Monitor

1. Connect the oscilloscope CH1 to TP102 and CH2 to TP651.
2. Adjust VR102 so that the timing of the phase at TP102 and TP651 are as shown in below.



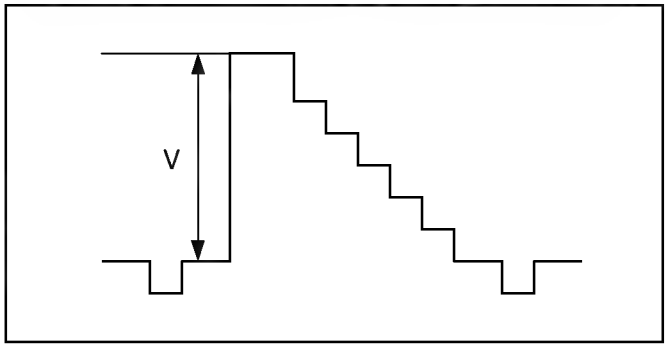
3. Playback the color bar portion of Alignment tape.
4. Adjust VR102 so that the phase synchronized within 0 ± 10 nsec between REF IN (CHA) and Video 1 Out (CHB) as shown in figure.



7-17. Component Y Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	V = 700mV ± 7mV
TEST	COMPONENT Y OUT
ADJ.	VR700 (I-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

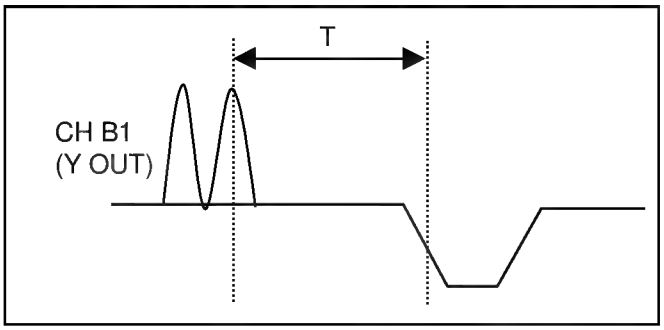
1. Set the SW950 to M II side on V OUT P.C.Board..
2. Adjust VR700 so that the V level is 700mV ± 7mV.



7-18. Video Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	T = 1.26 ± 0.02usec
TEST	Y OUT
ADJ.	VR260 (A-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (Area Marker portion)
M.EQ	Waveform Monitor

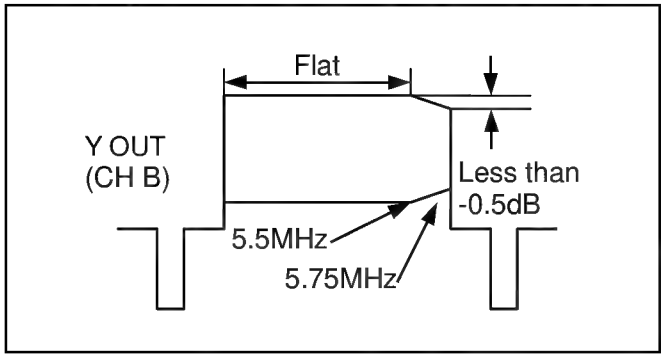
1. Open the Video Adjust menu on Service menu and set item "D01:VIDEO BLANK" to OFF position.
2. Adjust VR260 so that the timing T is within specification.
3. After finish this adjustment, set to ON position of item "D01:VIDEO BLANK".



7-19. Component Y Frequency Response Adjustment

P.C.B.	V_OUT (F4)
SPEC.	5.5MHz = Less than –0.5dB
TEST	COMPONENT Y OUT
ADJ.	VR701 (I-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (H Sweep portion)
M.EQ	Waveform Monitor

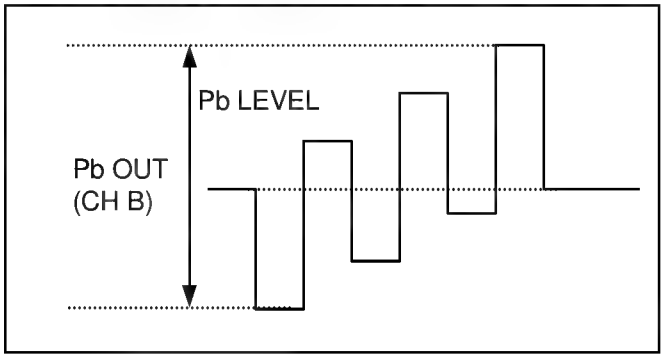
1. Adjust VR701 so that the frequency response becomes flat.



7-20. Component Pb Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	525mV ± 5mV
TEST	COMPONENT PB OUT
ADJ.	VR706 (J-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

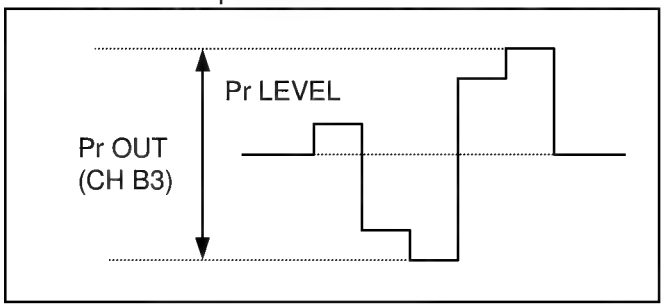
1. Set the SW950 to M II side on V OUT P.C.Board..
2. Adjust VR706 so that the Pb level of component out is within specification.



7-21. Component Pr Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	525mV ± 5mV
TEST	COMPONENT Pr OUT
ADJ.	VR704 (H-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

1. Set the SW950 to M II side on V OUT P.C.Board..
2. Adjust VR704 so that the Pr level of component out is within specification.

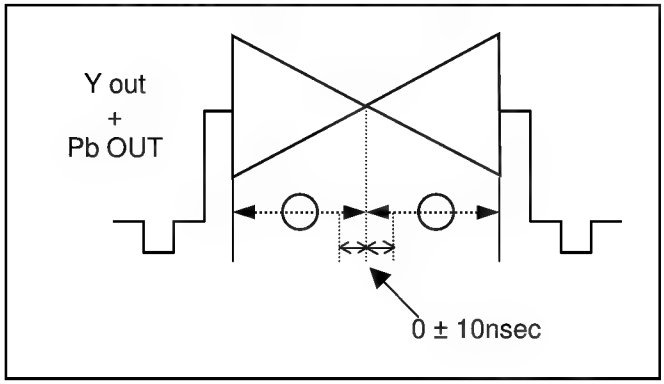


7-22. Component Y/Pb Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec
TEST	COMPONENT Y OUT, PB OUT
ADJ.	VR705 (J-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (Bowtie portion)
M.EQ	Waveform Monitor

1. Set the waveform monitor in the YC timing measuring mode (CH B1 + CH B2).
2. Adjust VR705 so that the cross point of the envelope is at the center.

Note: Incase of WFM monitor does not have Y-Pb timing adjustment mode, if the oscilloscope have "ADD" and "INVERT" switch, please use those switch for make below waveform.

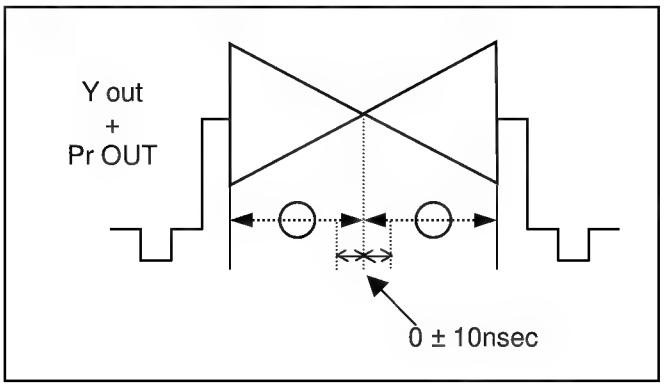


7-23. Component Y/Pr Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec
TEST	COMPONENT Y OUT, Pr OUT
ADJ.	VR702 (H-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (Bowtie portion)
M.EQ	Waveform Monitor

1. Set the waveform monitor in the YC timing measuring mode (CH B1 + CH B2).
2. Adjust VR702 so that the cross point of the envelope is at the center.

Note: Incase of WFM monitor does not have Y-Pb timing adjustment mode, if the oscilloscope have "ADD" and "INVERT" switch, please use those switch for make below waveform.

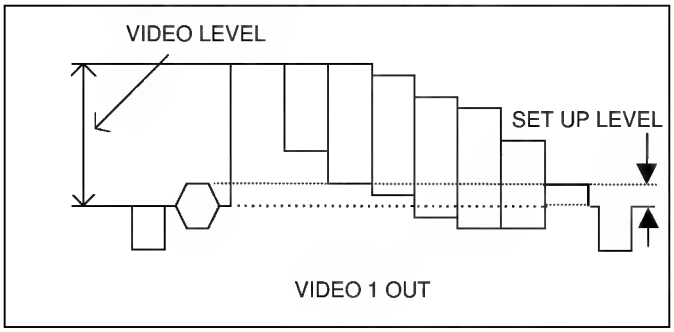


7-24. Composite Set up Adjustment (Set up ADD mode)

P.C.B.	V_OUT (F4)
SPEC.	Set up level = 7.5 ± 0.5IRE
TEST	VIDEO 1 OUT
ADJ.	VR905 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

1. Set the item "614: VOUT SET UP" to "ADD" on Set-up menu.
2. Adjust VR905 so that the Set-up level is 7.5 ± 0.5IRE.

NOTE: Signal have carrier leak and noise, therefore set Y-filter mode on WFM monitor.

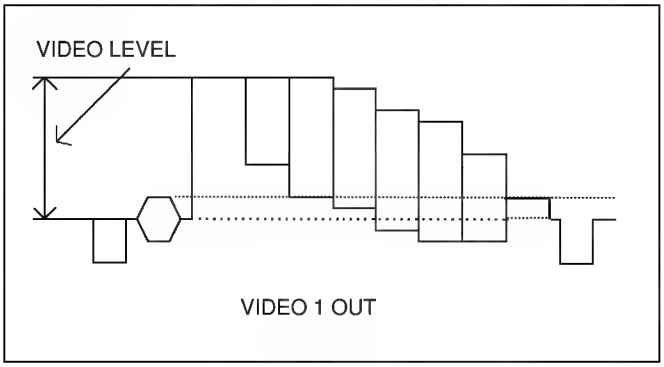


7-25. Composite Video Level Adj. (Set up ADD mode)

P.C.B.	V_OUT (F4)
SPEC.	Video level = 100 ± 1 IRE
TEST	VIDEO 1 OUT
ADJ.	VR904 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Waveform Monitor

1. Set the item "614: VOUT SET UP" to "ADD" on Set-up menu.
2. Adjust VR904 so that the Video level is 100 ± 1 IRE.

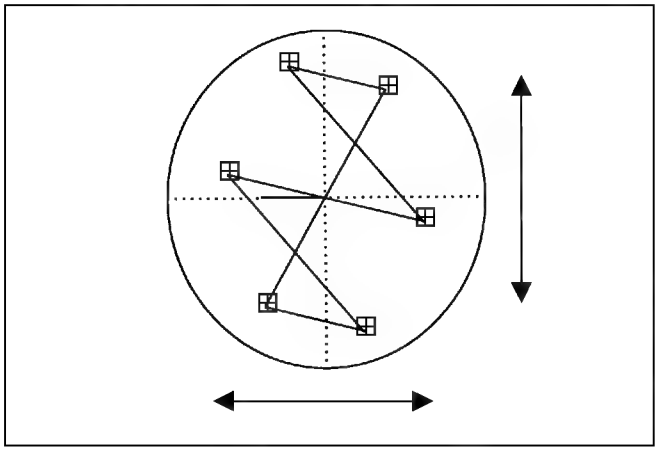
NOTE: Signal have carrier leak and noise, therefore set Y-filter mode on WFM monitor.



7-26. Vector Adjustment (Set up ADD mode)

P.C.B.	V_OUT (F4)
SPEC.	All vectors are in the Inner Boxes
TEST	VIDEO 1 OUT
ADJ.	VR809 (I-1),VR810 (I-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3580KM (75% Color Bar portion)
M.EQ	Vector Scope

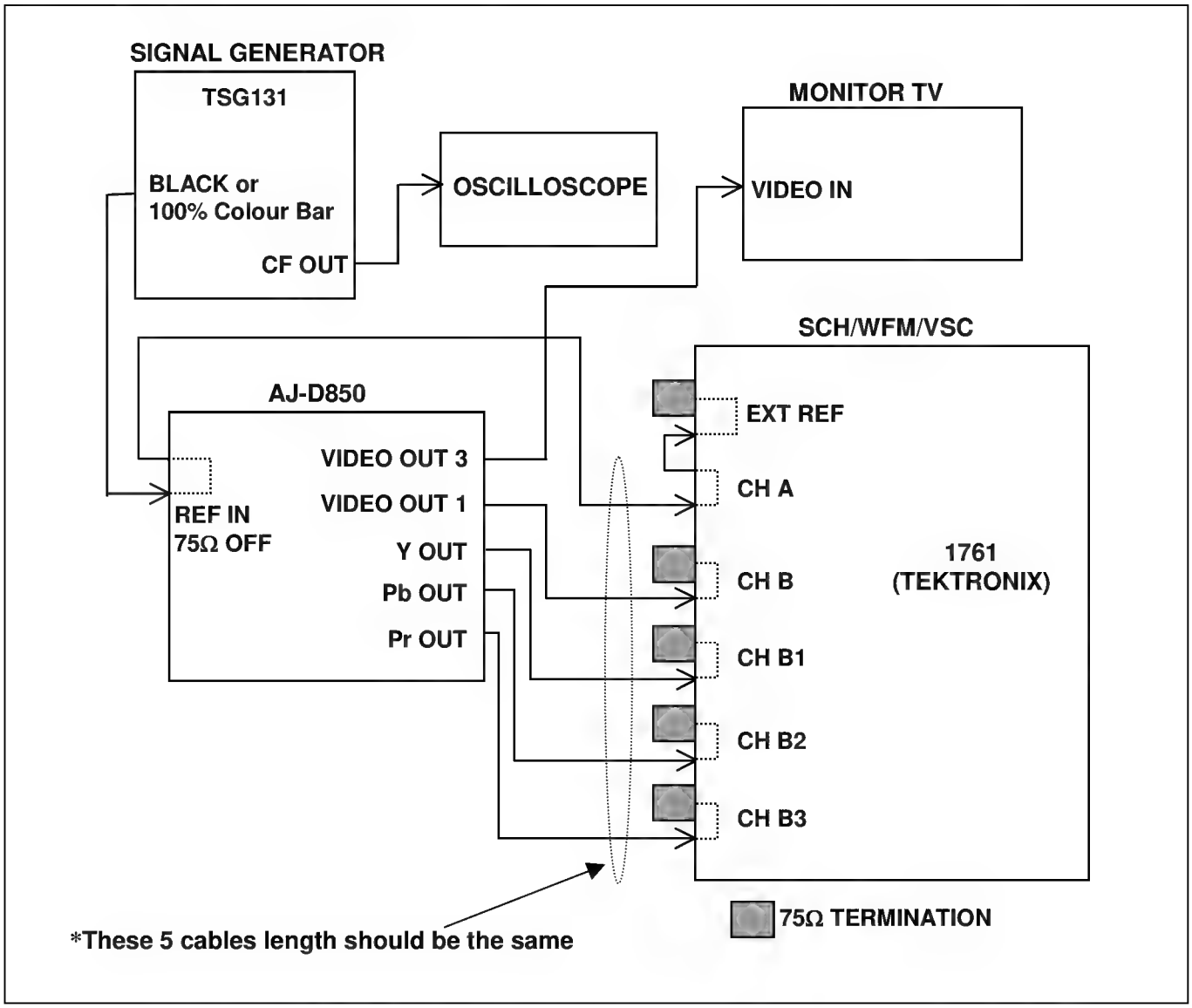
1. Set the item "614: VOUT SET UP" to "ADD" on Set-up menu.
2. Adjust VR809(PR) and VR810(PB) so that the each vector points are in the square mark on the vector scope.



7. Video Out P. C. Board (F4) [FOR PAL ONLY]

Please warm up the VTR about 10 minute before adjustment.

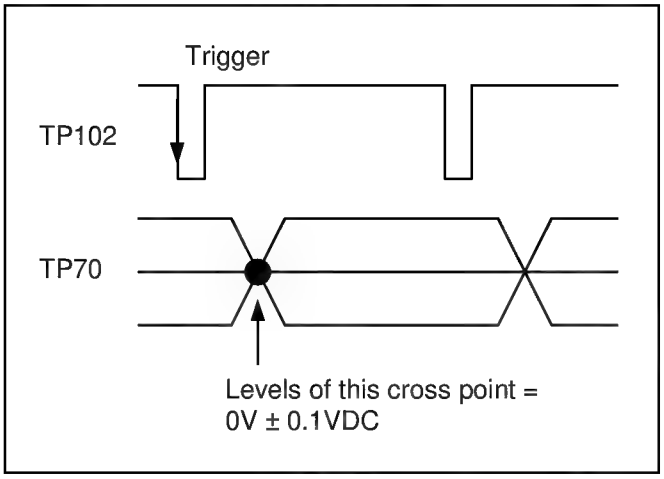
CONNECTION



7-1. REF PLL Center Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0V ± 0.1VDC
TEST	TP70 (D-1), TP102
ADJ.	VC70 (D-1)
INPUT	EXT REF IN: Composite 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

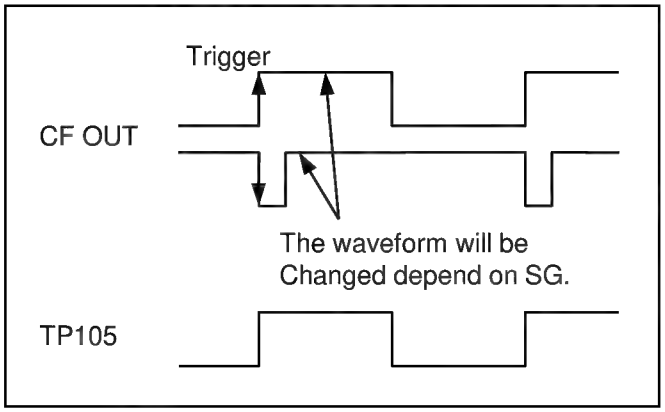
1. Adjust VC70 so that the voltage is 0V ± 0.1VDC.



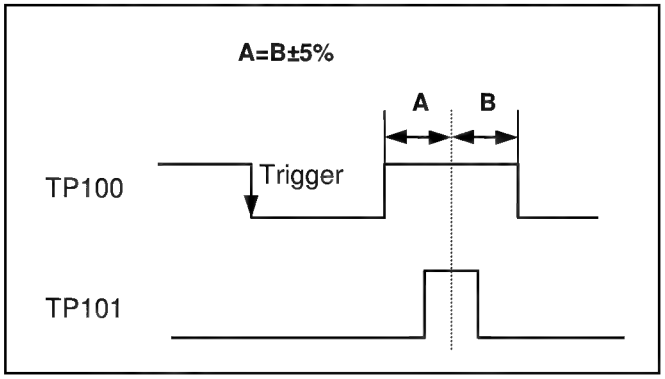
7-2. REF CF Detection Adjustment

P.C.B.	V_OUT (F4)
SPEC.	See Figure, A = B ± 5%
TEST	TP105 (E-4), CF Out of Signal SG TP100 (E-1), TP101 (E-1)
ADJ.	VC100 (C-1)
INPUT	EXT REF IN: Composite 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

1. Connect the oscilloscope CH1 to the CF output of composite signal generator and CH2 to TP105.
2. Adjust VR100 so that the phase is synchronized between CF pulses and TP105 as shown in figure.



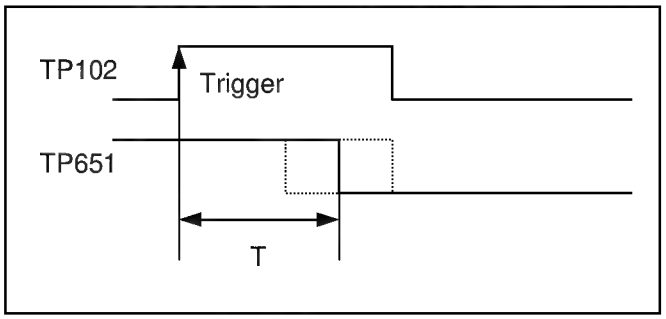
3. Connect the oscilloscope CH1 to TP101 and CH2 to TP100.
4. Expand (delay) the rising edge of TP100.
5. Slowly and slightly rotate VR100 so that the high period of TP100 is positioned at the center of the stable waveform at TP101.



7-3. Ref. H Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	T = 3.3 ± 0.1us
TEST	TP102 (E-1), TP651 (F-2)
ADJ.	VR101 (C-1)
INPUT	EXT REF IN: Composite 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

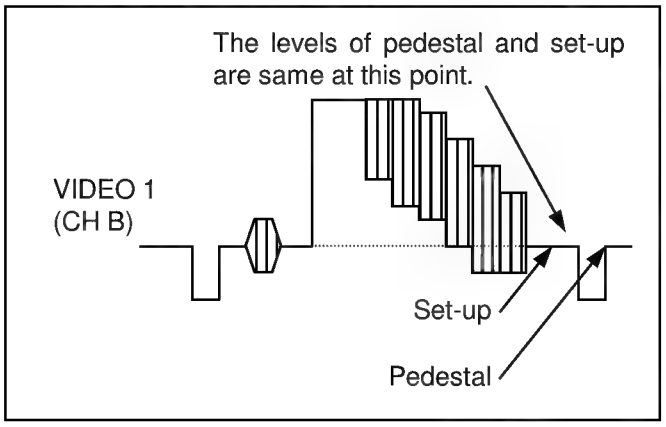
1. Connect the oscilloscope CH1 to TP102 and CH2 to TP651.
2. Adjust VR101 so that the timing of the pulses at TP651 and TP102 is as shown in below.



7-4. Composite Set-up Adjustment

P.C.B.	V_OUT (F4)
SPEC.	Set-up Level = Pedestal Level ± 5mV
TEST	VIDEO 1
ADJ.	VR902 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

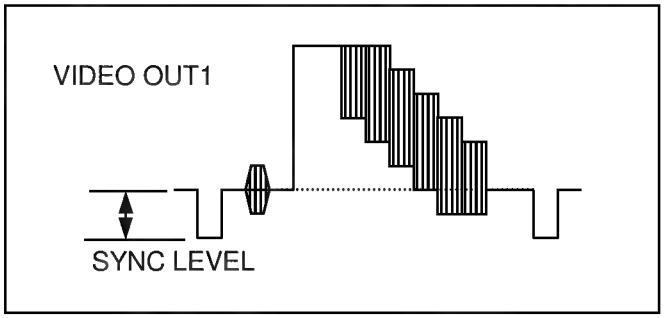
1. Adjust VR902 so that the set-up level is the same level as the pedestal level.



7-5. Sync Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	300mV ± 3mV
TEST	VIDEO OUT 1
ADJ.	VR950 (F-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

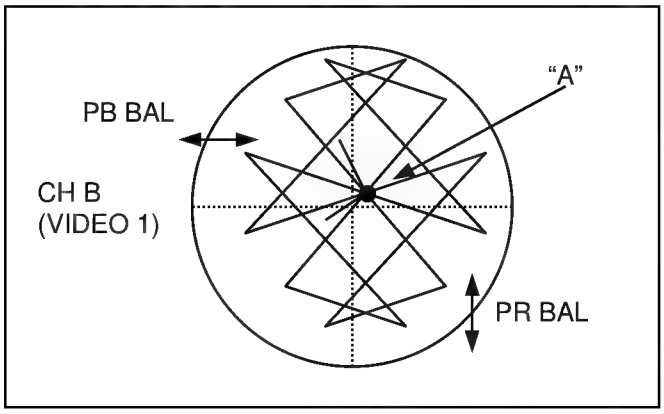
1. Adjust VR950 so that the Sync Level is 300mV ± 3mV.



7-6. Carrier Balance Adjustment

P.C.B.	V_OUT (F4)
SPEC.	Cross point "A" at the center of scope.
TEST	REF IN (CH A), VIDEO OUT 1(CH B)
ADJ.	VR806 (H-1), VR807 (H-1)
INPUT	EXT REF IN
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Vector Scope

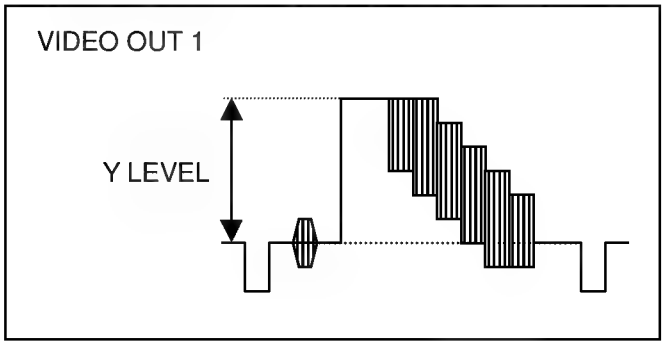
1. Set the vector scope in the without set-up mode.
2. Adjust VR806 (PB BAL) and VR807 (PR BAL) so that the cross point "A" is positioned at the center of the vector scope.



7-7. Composite Y Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	700mV ± 7mV
TEST	VIDEO 1
ADJ.	VR900 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

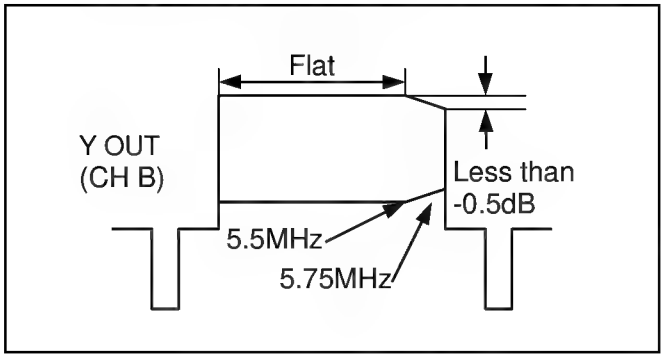
1. Adjust VR900 so that the Y level is 700mV ± 7mV.



7-8. Composite Y Frequency Response Adjustment

P.C.B.	V_OUT (F4)
SPEC.	5.5MHz = Less than –0.5dB
TEST	Y OUT
ADJ.	VR901 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (H-Sweep portion)
M.EQ	Waveform Monitor

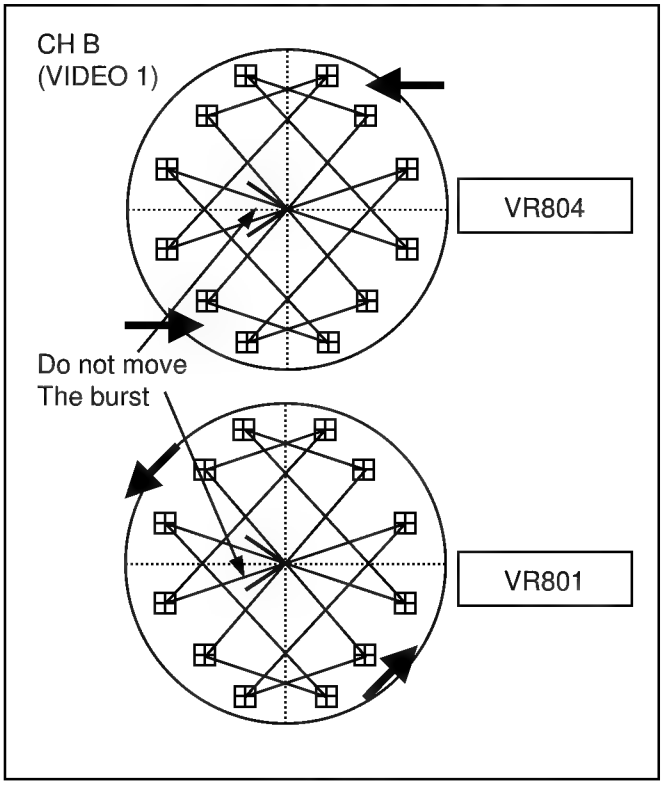
1. Adjust VR901 so that the frequency response becomes flat.
   a) The level of 5.5MHz portion is less than –0.5dB.
   b) The middle frequency is flat.

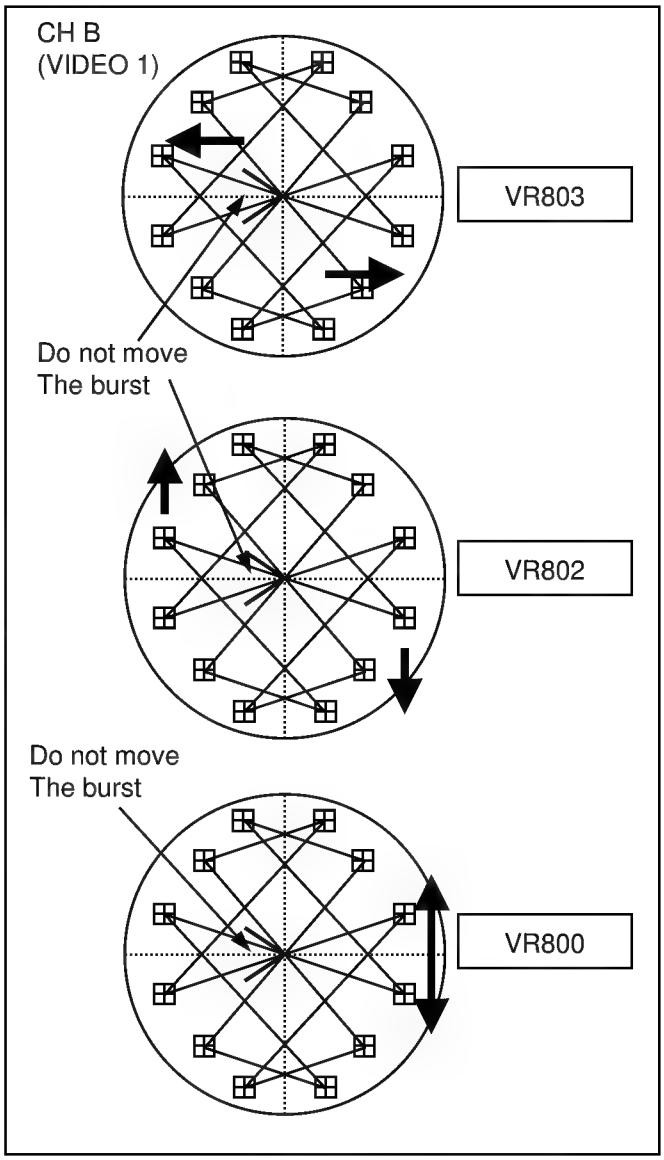


7-9. Vector Adjustment

P.C.B.	V_OUT (F4)
SPEC.	All vectors are in the Inner Boxes
TEST	VIDEO OUT 1
ADJ.	VR804 (I-1), VR801 (H-1), VR803 (H-1) VR802 (I-1), VR800 (H-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Vector Scope

1. Set the burst position on the Vector Scope at correct position.
2. Adjust the following VR's so that the colour bar's each vector points are in the square mark on the vector scope.
   - VR804 : Quad Phase
   - VR801 : Hue Phase
   - VR803 : Encode PB Level
   - VR802 : Encode PR Level
   - VR800 : PAL Phase

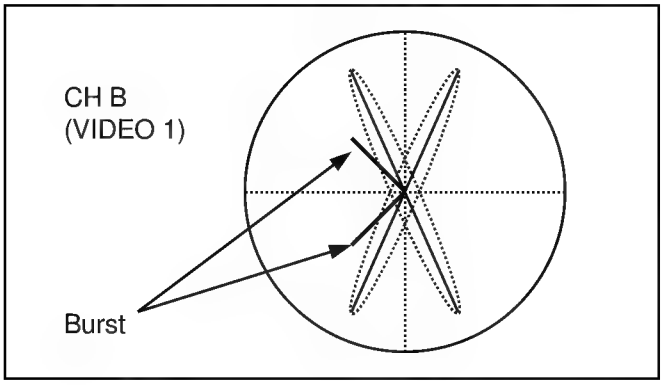




7-10. Composite Pb/Pr Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec
TEST	VIDEO OUT 1
ADJ.	VR703 (H-3)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (Bowtie portion)
M.EQ	Vector Scope

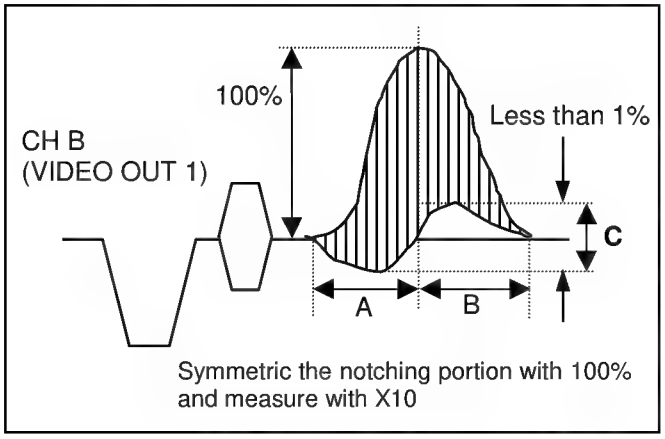
1. Adjust VR703 so that the signal on the vector scope becomes 2 straight lines (X) as shown in figure.



7-11. Composite Y/C Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec (C = less than 1%)
TEST	VIDEO OUT 1
ADJ.	VR903 (G-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (Pulse Bar portion)
M.EQ	Waveform Monitor

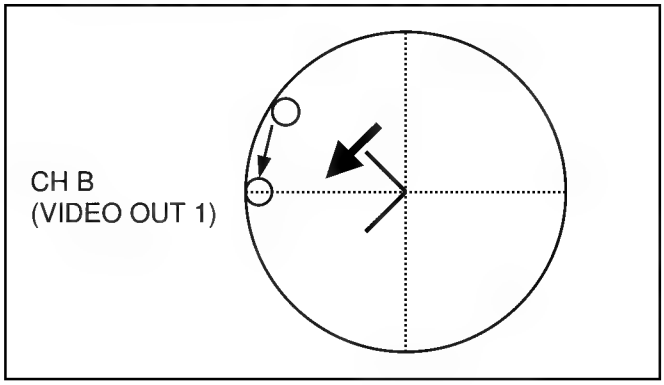
1. Adjust VR903 so that the portion A and B are become symmetric left and right and level of portion C less than 1% against level of waveform 100% as shown in figure.
2. When performing this adjustment, the level of waveform may be changed. Therefore, level of waveform is adjusted by Chroma VR on the front panel during this adjustment.
3. After finish this adjustment set the Chroma VR to preset position.
4. After completion of this adjustment, "6-12. Sub-Carrier Phase Adjustment" should be performed.



7-12. Sub-Carrier Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 1degree
TEST	VIDEO OUT 1, REF IN
ADJ.	VR160 (C-1)
INPUT	REF IN: Composite 100% Colour Bar
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	SCH Meter

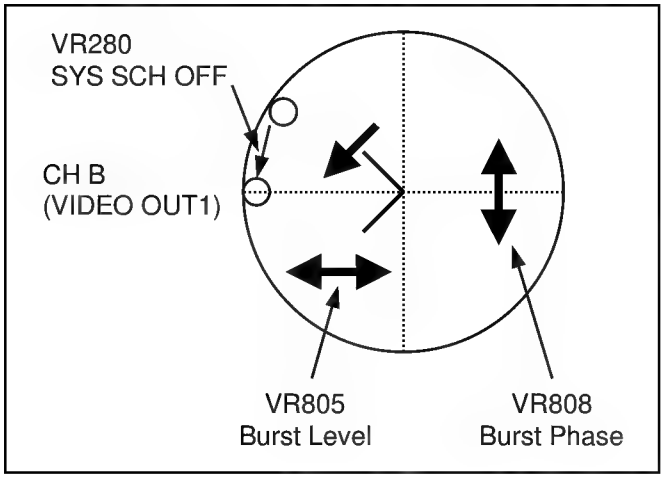
1. Adjust VR160 so that the SCH of VIDEO OUT is same as EXT-REF-IN.



7-13. Burst Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 1degree
TEST	VIDEO OUT 1
ADJ.	VR280 (C-1), VR805 (I-1), VR808 (I-1)
INPUT	REF IN: Composite 100% Colour Ba
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	SCH Meter

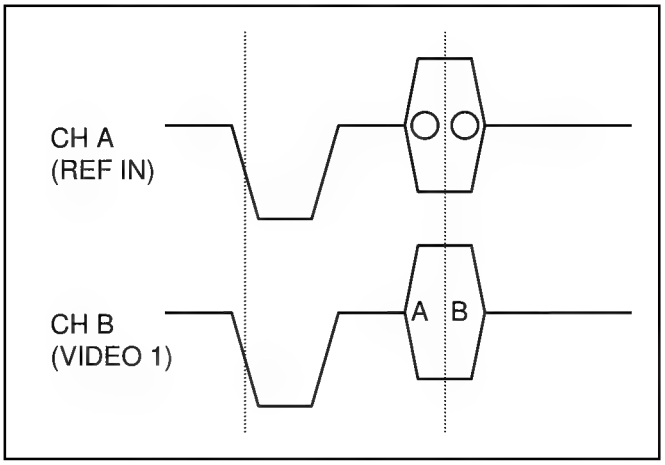
1. Adjust VR280 while changing the channels A and B of the SCH meter alternately so that the SCH is 0 degree.
2. Adjust VR805 and VR808 while changing the channels A and B of the SCH meter alternately so that the burst level and burst phase are become same between VIDEO 1 OUT(CHB) and REF(CHA).



7-14. Burst Position Adjustment

P.C.B.	V_OUT (F4)
SPEC.	A = B ± 5%
TEST	VIDEO OUT 1, REF IN
ADJ.	VR201 (A-1)
INPUT	REF IN: Composite 100% Colour Bar
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

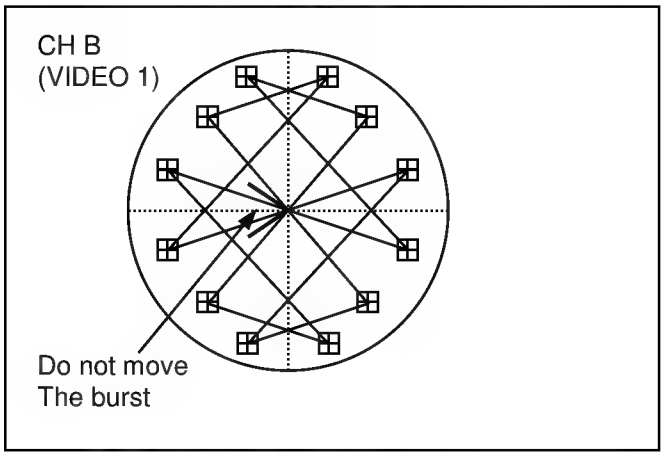
1. Adjust VR201 while changing the channels A and B of the vector scope alternately so that the center of the burst of the reference and VIDEO OUT 1 are phase syncronized.



7-15. Confirmation of Vector

P.C.B.	V_OUT (F4)
SPEC.	All vectors are in the Inner Boxes
TEST	VIDEO OUT 1
ADJ.	VR804 (I-1), VR801 (H-1), VR803 (H-1) VR802 (I-1), VR800 (H-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Vector Scope

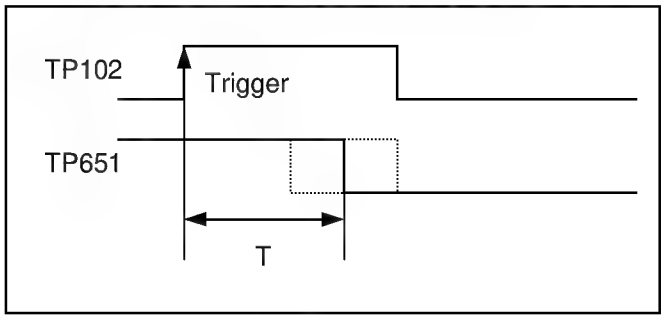
1. Set the burst position on the Vector Scope at correct position.
2. Confirm that the colour bar's each vector points are in the square mark on the vector scope.
3. If out of specification, adjust the following VR's so that the colour bar's each vector points are in the square mark on the vector scope.(Refer to item 6-9. Vector Adjustment).
   - VR804 : Quad Phase
   - VR801 : Hue Phase
   - VR803 : Encode PB Level
   - VR802 : Encode PR Level
   - VR800 : PAL Phase



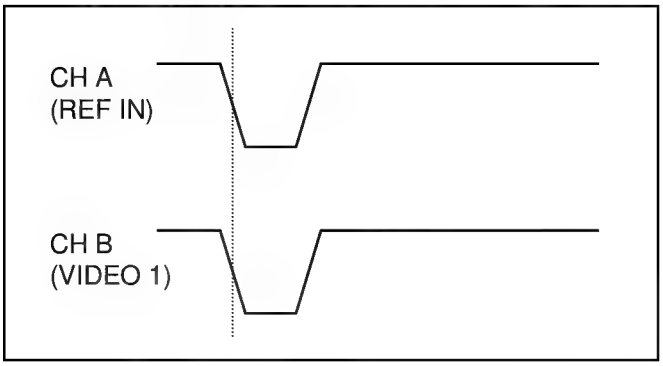
7-16. Component Ref. H & Sub-Carrier Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	T = 3.3 ± 0.1usec 0 ± 10nsec
TEST	TP102, TP651 VIDEO OUT 1, EXT REF IN
ADJ.	VR102 (C-1)
INPUT	REF IN : 100% colour bar (without burst: Component Y)
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, Waveform Monitor

1. Connect the oscilloscope CH1 to TP102 and CH2 to TP651.
2. Adjust VR102 so that the timing of the phase at TP102 and TP651 are as shown in below.



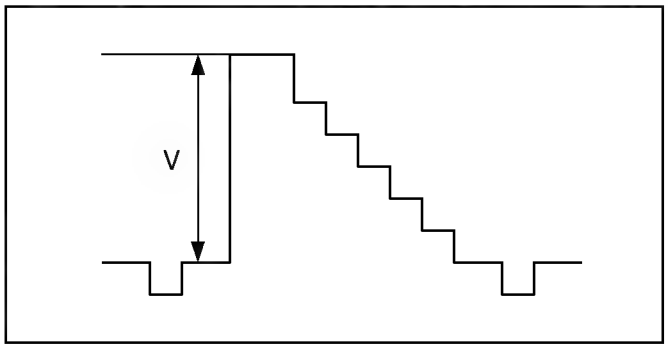
3. Set the waveform monitor in the EXT-REF mode.
4. Adjust VR102 so that the phase synchronized between REF IN (CHA) and Video 1 Out (CHB) as shown in figure.



7-17. Component Y Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	V = 700mV ± 7mV
TEST	COMPONENT Y OUT
ADJ.	VR700 (I-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

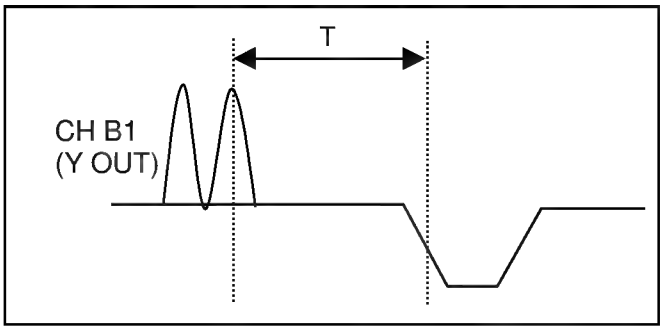
1. Adjust VR700 so that the V level is 700mV ± 7mV.



7-18. Video Phase Adjustment

P.C.B.	V_OUT (F4)
SPEC.	T = 0.96 ± 0.02usec
TEST	Y OUT
ADJ.	VR260 (A-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (Area Marker portion)
M.EQ	Waveform Monitor

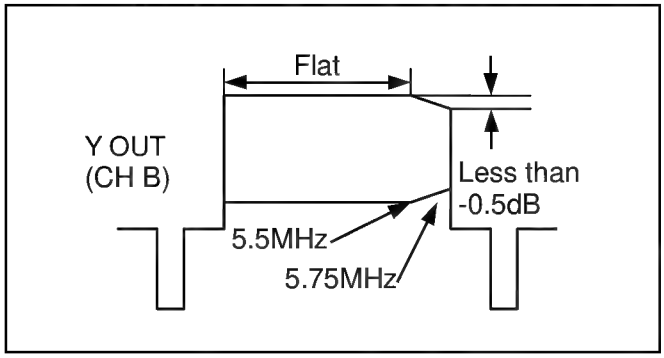
1. Open the Video Adjust menu on Service menu and set item "D01:VIDEO BLANK" to OFF position.
2. Adjust VR260 so that the timing T is within specification.
3. After finish this adjustment, set to ON position of item "D01:VIDEO BLANK".



7-19. Component Y Frequency Response Adjustment

P.C.B.	V_OUT (F4)
SPEC.	5.5MHz = Less than –0.5dB
TEST	COMPONENT PB OUT
ADJ.	VR701 (I-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (H Sweep portion)
M.EQ	Waveform Monitor

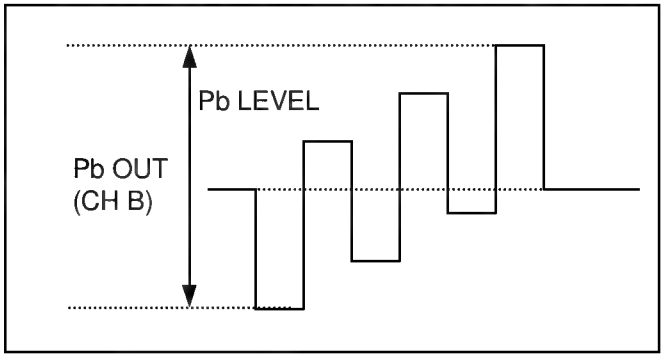
1. Adjust VR701 so that the frequency response becomes flat.



7-20. Component Pb Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	700mV ± 7mV
TEST	COMPONENT PB OUT
ADJ.	VR706 (J-1)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

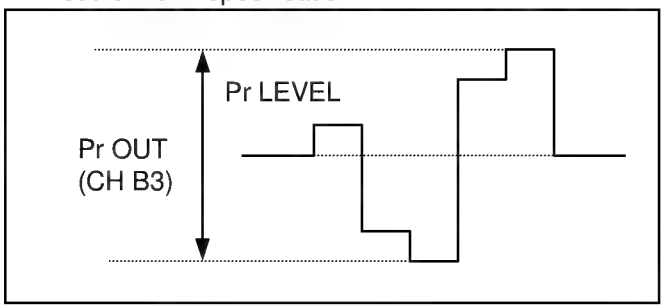
1. Adjust VR706 so that the Pb level of component out is within specification.



7-21. Component Pr Level Adjustment

P.C.B.	V_OUT (F4)
SPEC.	700mV ± 7mV
TEST	COMPONENT Pr OUT
ADJ.	VR704 (H-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (100% Colour Bar portion)
M.EQ	Waveform Monitor

1. Adjust VR704 so that the Pr level of component out is within specification.

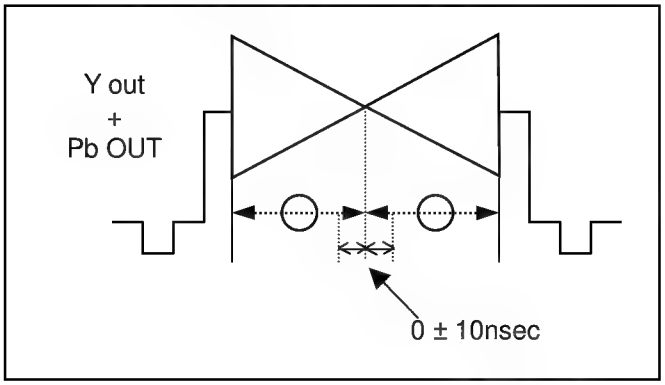


7-22. Component Y/Pb Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec
TEST	COMPONENT Y OUT, PB OUT
ADJ.	VR705 (J-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (Bowtie portion)
M.EQ	Waveform Monitor

1. Set the waveform monitor in the YC timing measuring mode (CH B1 + CH B2).
2. Adjust VR705 so that the cross point of the envelope is at the center.

Note: Incase of WFM monitor does not have Y-Pb timing adjustment mode, if the oscilloscope have "ADD" and "INVERT" switch, please use those switch for make below waveform.

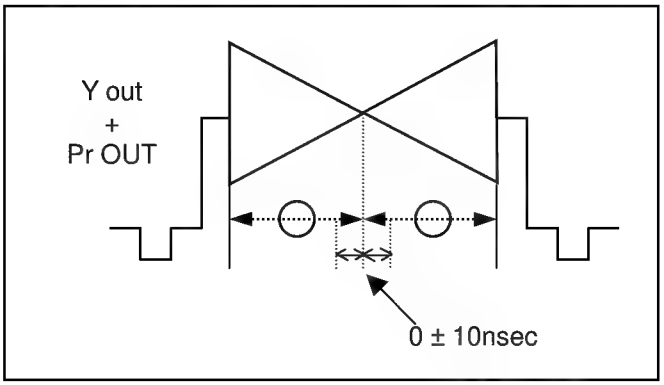


7-23. Component Y/Pr Timing Adjustment

P.C.B.	V_OUT (F4)
SPEC.	0 ± 10nsec
TEST	COMPONENT Y OUT, Pr OUT
ADJ.	VR702 (H-2)
INPUT	----------
MODE	PLAY
TAPE	VFM3680KM (Bowtie portion)
M.EQ	Waveform Monitor

1. Set the waveform monitor in the YC timing measuring mode (CH B1 + CH B2).
2. Adjust VR702 so that the cross point of the envelope is at the center.

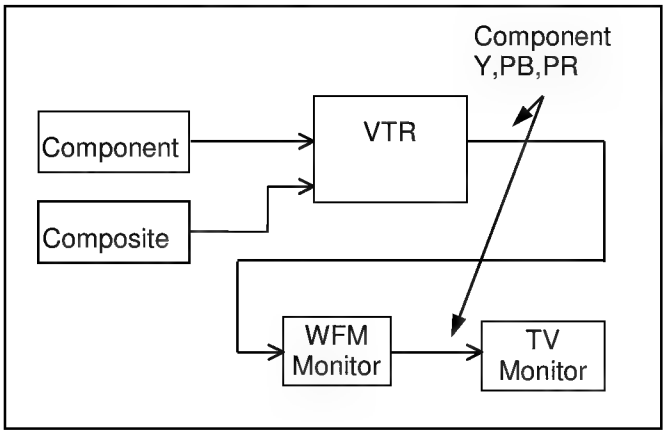
Note: Incase of WFM monitor does not have Y-Pb timing adjustment mode, if the oscilloscope have "ADD" and "INVERT" switch, please use those switch for make below waveform.



8. V IN P. C. Board [FOR NTSC ONLY]

8-1. Preparation for Video In Adjustment

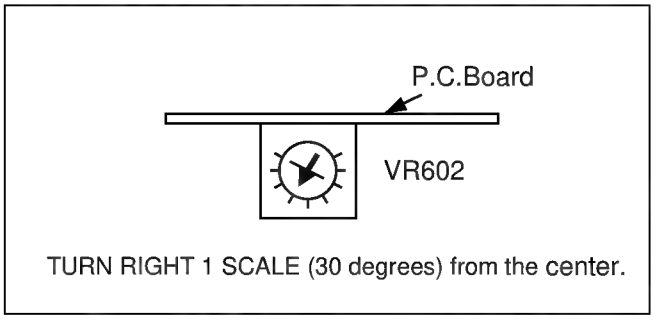
1. Connect the equipment as shown in the figure.
2. V IN P.C.Board adjustment should be performed after the V OUT P.C.Board adjustment.
3. Set the menu and SW as follows.
   SET UP MENU 613: V IN SETUP → THOU
   614: V OUT SETUP → THOU
   600: PB PR IN LV → M II
   • SW950 → M II (V OUT P.C.Board.)



8-2. 13.5MHz VCO Adjustment

P.C.B.	V_IN (F6)
SPEC.	0V ± 0.1V
TEST	TP601
ADJ.	VL601, VR602
INPUT	Component 100% Color Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

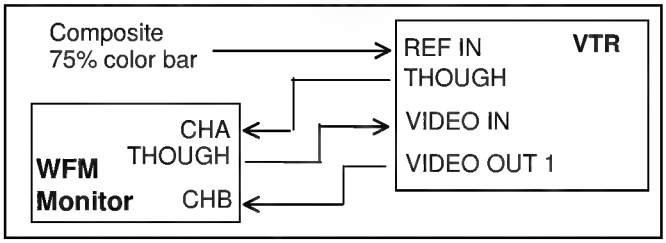
1. Set VR602 below figure indicated position.
2. Adjust VL601 so that the DC Voltage is 0V ± 0.1V.



8-3. Component Y Timing Adjustment

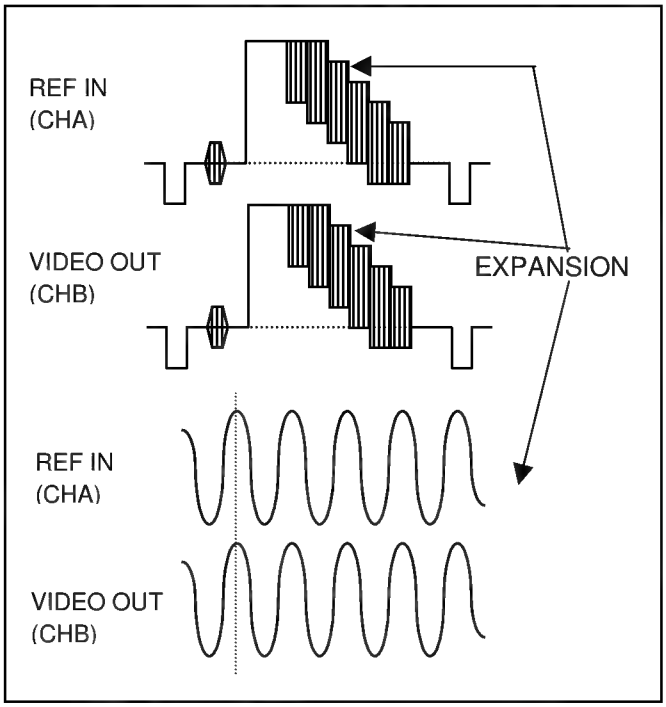
P.C.B.	V_IN (F6)
SPEC.	Phase synchronized between REF IN and VIDEO OUT 1.
TEST	REF IN, VIDEO OUT 1
ADJ.	VR601
INPUT	Composite 100% Color Bar
MODE	EE
TAPE	----------
M.EQ	WFM Monitor

1. Connect the cables as indicated as below.



2. Expand the GREEN portion of color bar signal.
3. Adjust VR601 while change the CHA and CHB of WFM monitor so that the phase synchronized between CHA (REF IN) and CHB (VIDEO OUT).

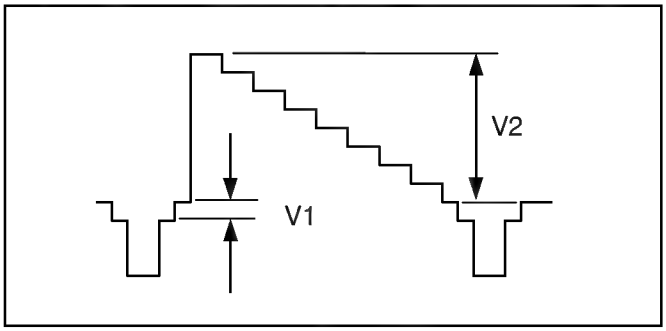
NOTE: This adjustment should be performed after V OUT P.C.Board adjustment.



8-4. Component Y Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 0V ± 7mV, V2 = 700mV ± 7mV
TEST	Y OUT
ADJ.	VR702, VR701
INPUT	Component 100% Color Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

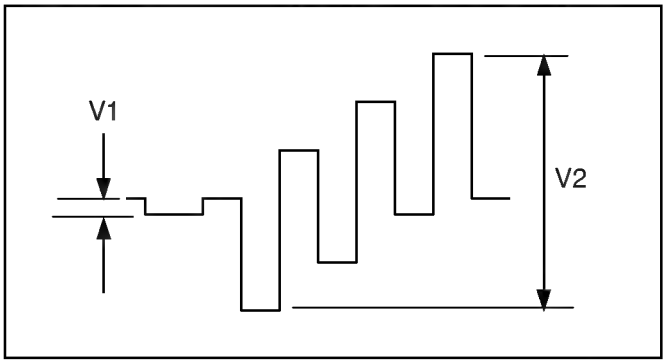
1. Adjust VR702 so that the V1 is 0V ± 7mV.
2. Adjust VR701 so that the V2 is 700mV ± 7mV.



8-5. Component PB Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 0V ± 7mV, V2 = 700mV ± 7mV
TEST	PB OUT
ADJ.	VR752, VR753
INPUT	Component 100% Color Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

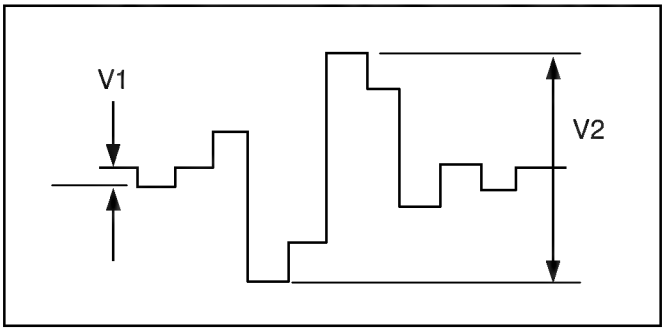
1. Adjust VR752 so that the V1 is 0 ± 7mV.
2. Adjust VR753 so that the V2 is 700m ± 7mV.



8-6. Component PR Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 0V ± 7mV, V2 = 700mV ± 7mV
TEST	PR OUT
ADJ.	VR802, VR803
INPUT	Component 100% Color Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

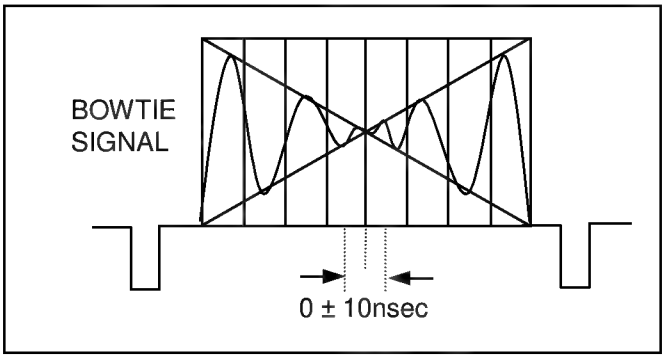
1. Adjust VR802 so that the V1 is 0V ± 7mV.
2. Adjust VR803 so that the V2 is 700mV ± 7mV.



8-7. Component Y/C Timing Adjustment

P.C.B.	V_IN (F6)
SPEC.	0 ± 10nsec
TEST	Y, PB, PR OUT
ADJ.	VR751 (PB), VR801 (PR)
INPUT	Component IN : BOWTIE
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

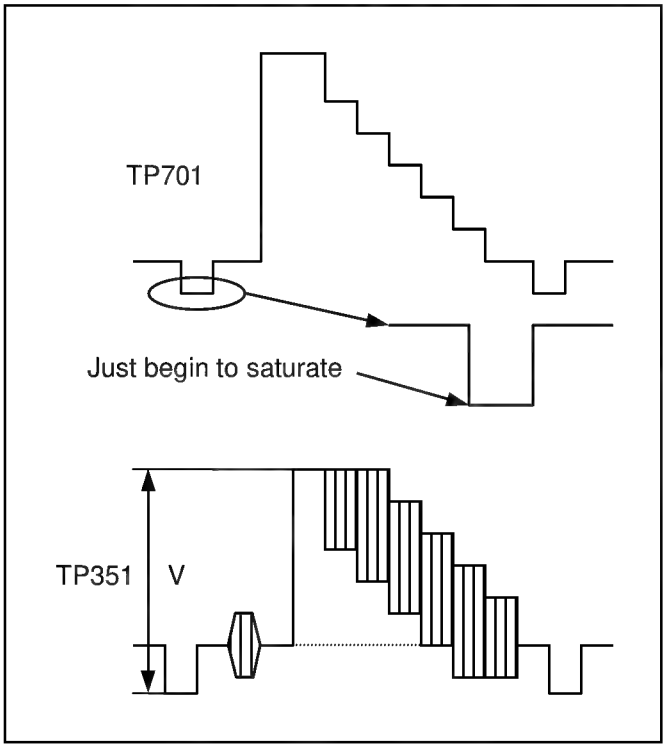
1. Adjust VR751 so that the minimum level of the Y/PB timing signal is 0 ± 10nsec against the center scale.
   Adjust VR801 so that the minimum level of the Y/PB timing signal is 0 ± 10nsec against the center scale.



8-8. Composite Input Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 1.6V ± 0.02V
TEST	TP1(SUB P.C.B.), TP351
ADJ.	VR351, VR301
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

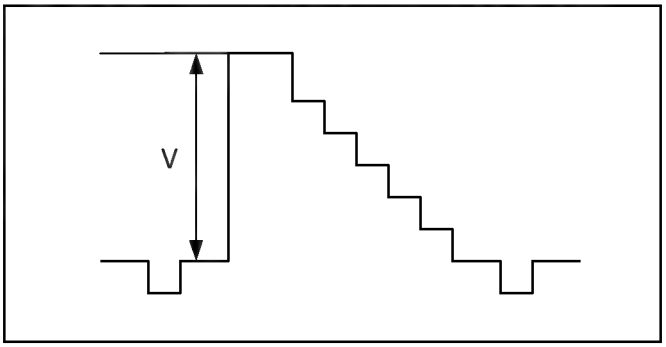
1. Observe TP1 and adjust VR351 at the point where the sync tip just begin to saturate.
2. Adjust VR301 so that the voltage at TP351 is 1.6V ± 0.02V.
   NOTE: Oscilloscope trigger should be connect to Connector P2-16a



8-9. Composite Y Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = 700mV ± 7mV
TEST	Y OUT
ADJ.	VR352
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

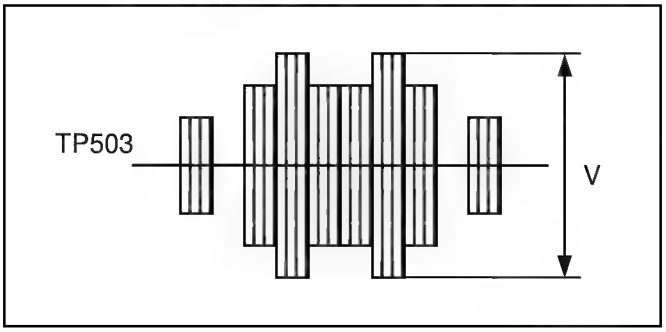
1. Adjust VR455 so that the V is 700mV ± 7mV.



8-10.Composite Chroma Level Adj.

P.C.B.	V_IN (F6)
SPEC.	V = 400mV ± 20mV
TEST	TP503, GND:TG4
ADJ.	VR451
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

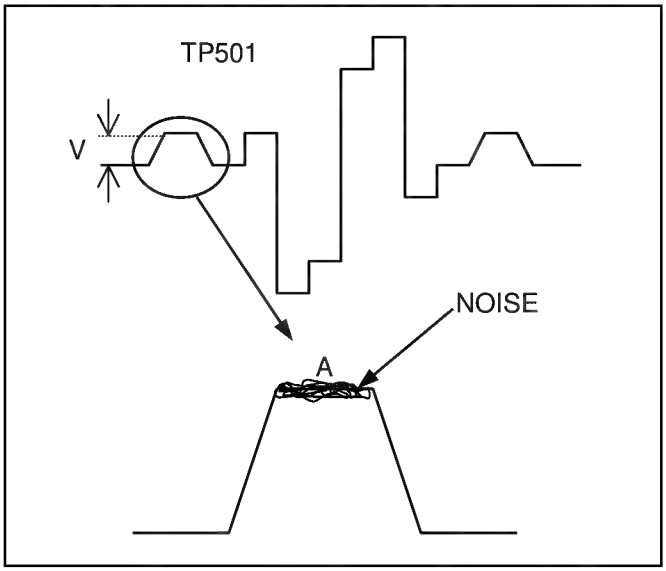
1. Adjust VR451 so that the V is 400mV ± 20mV.
   NOTE: Oscilloscope trigger should be connect to Connector P2-16a.



8-11. Composite Color Demodulation Adjustment

P.C.B.	V_IN (F6)
SPEC.	See figure
TEST	TP501, GND:TG4
ADJ.	VR501, VR512
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

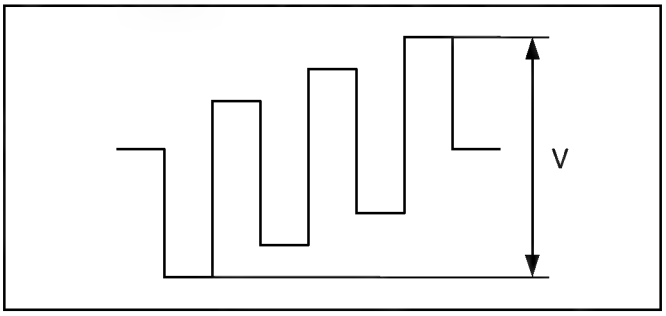
1. Turn VR512 to fully counter-clockwise.
2. Adjust VR501 so that the noise portion is positioned on the top of A portion as shown in figure.
3. Adjust VR512 so that the level V is become 0Vp-p.



8-12. Composite PB Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = 486mV ± 7mV
TEST	PB OUT
ADJ.	VR505
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

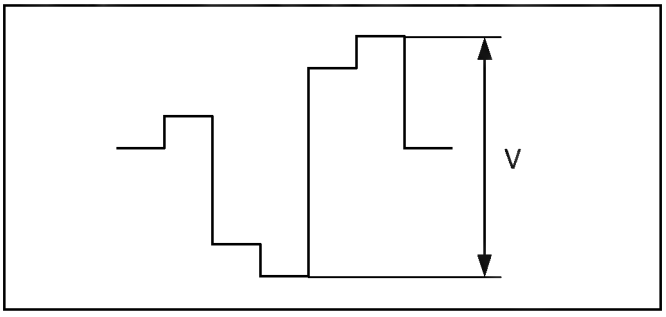
1. Adjust VR505 so that the V is 486mV ± 7mV



8-13. Composite PR Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = 486mV ± 7mV
TEST	PR OUT
ADJ.	VR511
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

1. Adjust VR511 so that the V is 486mV ± 7mV

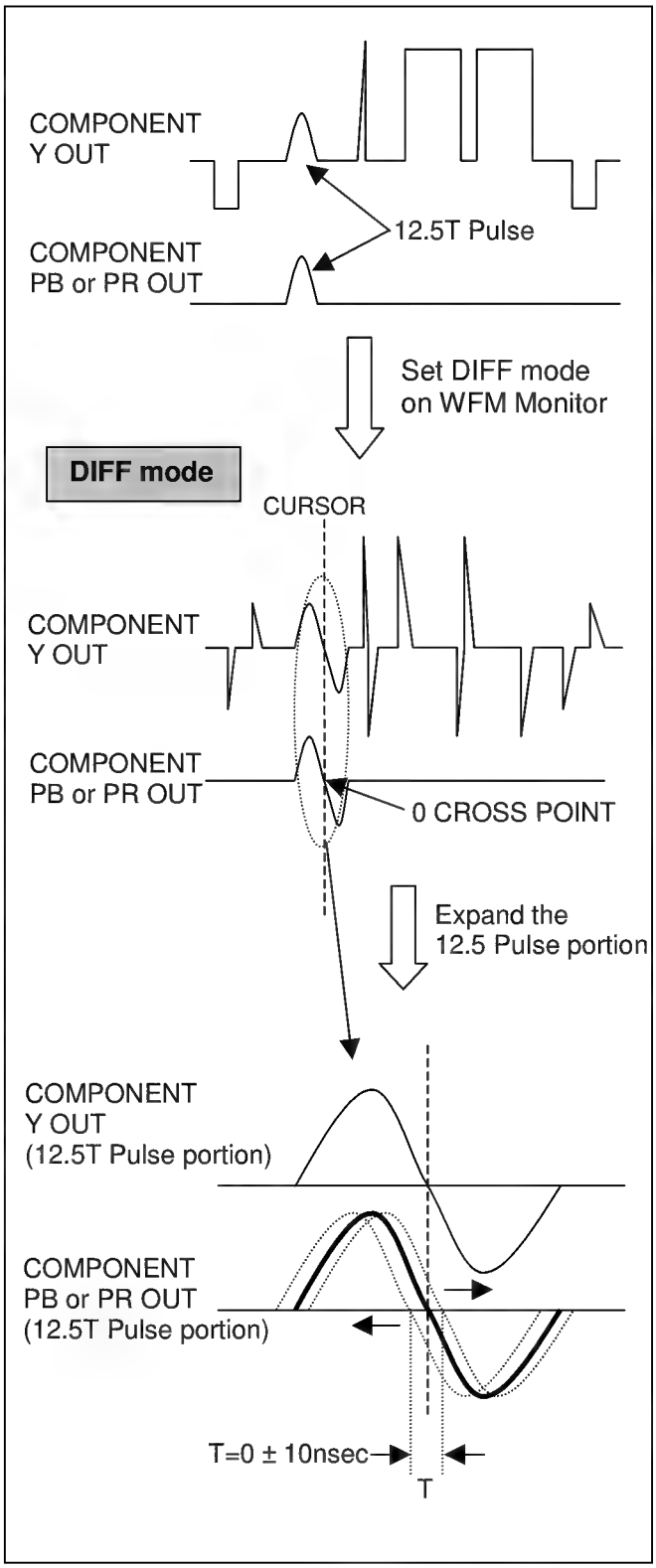


8-14. Composite YC Timing Adjustment

P.C.B.	V_IN (F6)
SPEC.	T = 0 ± 10nsec
TEST	Y PR PB OUT
ADJ.	VR510 (PB), VR507 (PR)
INPUT	Composite IN : 12.5T Pulse & Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

1. Confirm that the 12.5T Pulse & Bar signal appeared correctly on the scope with Component Y OUT as shown in figure.
2. Confirm that the 12.5T Pulse portion appeared correctly on the scope with Component PB and PR OUT as shown in figure.
3. Set WFM monitor to DIFF mode. In case of set the DIFF mode, waveform of Y, PB and PR signals are integrated as shown in figure.
4. Expand the 12.5 pulse portion (an ellipse dotted portion as indicated as figure) and set the cursor to 0 cross point as shown in figure.
5. Sine-wave is appeared on the scope by expansion as shown in figure.
6. Adjust VR510(PB) and VR507(PR) so that the phase synchronized between Y and PB, PR signals.

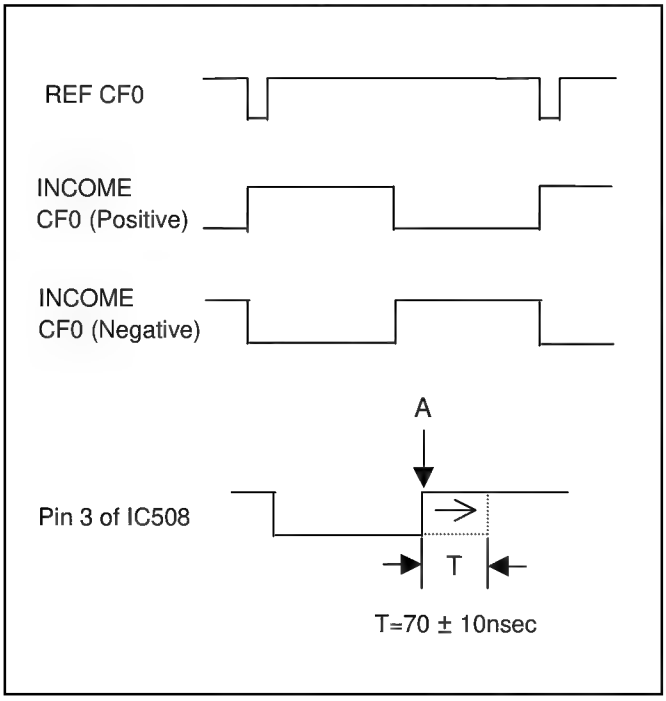
NOTE: Please use type of WFM Monitor attached DIFF mode



8-15. Composite SCH Detection Adjustment

P.C.B.	V_IN (F6)
SPEC.	T = 70 ± 10nsec
TEST	CF OUT (TEST SIG GEN) Connector P2-8C (INCOME CF0 pulse) Pin 3 of IC508
ADJ.	VR502
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

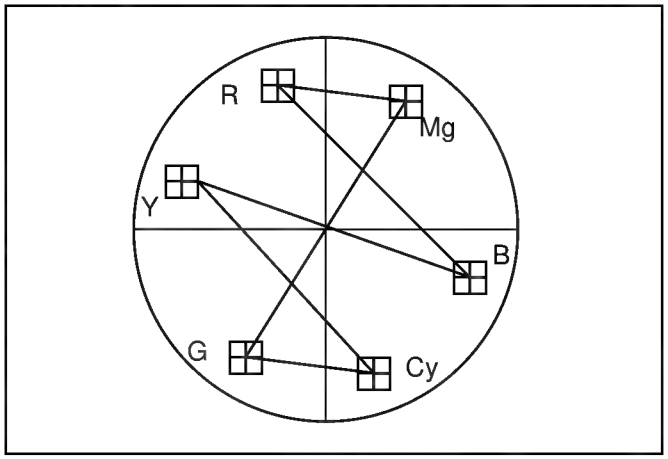
1. Set VR502 fully CCW.
2. If Income CF0 pulse does not negative pulse, slowly turn VR502 CW and set the position where the Income CF0 pulse just changes from the positive to negative phase as shown in below figure.
3. Set the VR502 so that the phase of Income CF0 pulse just changes from the negative to positive position as shown in below figure.
4. Slowly turn VR502 CW so that the rising edge A delayed 70usec ± 10nsec as shown in below figure.



8-16. Composite Vector Adjustment

P.C.B.	V_IN (F6)
SPEC.	All vector dots are In Inner Boxes
TEST	COMPOSITE OUT
ADJ.	VR512
INPUT	COMPOSITE 75% Color Bar (Set up 7.5%)
MODE	EE
TAPE	----------
M.EQ	Vector Scope

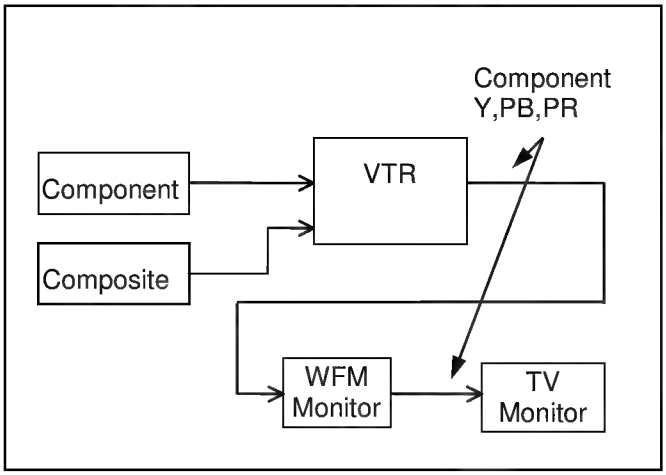
1. Adjust VR512 so that the all vector dots are in the inner boxes.



8. V IN P. C. Board [FOR PAL ONLY]

8-1. Preparation for Video In Adjustment

1. Connect the equipment as shown in the figure.
2. V IN P.C.Board adjustment should be performed after the V OUT P.C.Board adjustment.



8-2. 13.5MHz VCO Adjustment

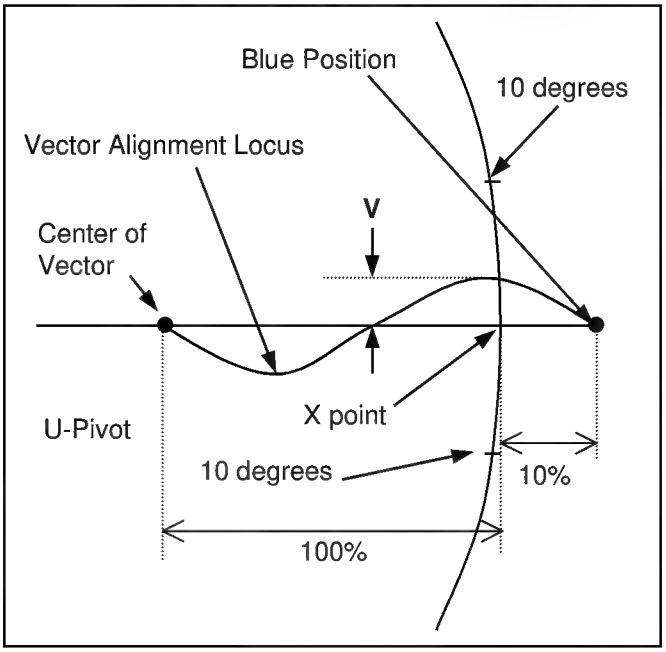
P.C.B.	V_IN (F6)
SPEC.	0V ± 0.1V
TEST	TP553, GND:TG6
ADJ.	VL551, VR552
INPUT	Component 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

1. Set VR552 to the center.
2. Adjust VL551 so that the DC Voltage is 0V ± 0.1V.

8-3. Component Y Timing Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = ± 0.5 degree
TEST	VIDEO OUT 1
ADJ.	VR551
INPUT	Composite 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Vector Scope

1. Connect the vector scope to composite out terminal.
2. Expand the Vector Alignment Locus, where the blue point position on vector scale(X point as shown in below figure) and set the Vector Alignment Locus on the u-pivot by adjust gain and phase VR on the vector scope.
3. Expand the Vector Alignment Locus 10% as compare with 100% as shown in below figure.
4. Adjust VR551 so that the vector adjustment locus is become straight, it should be in specification.



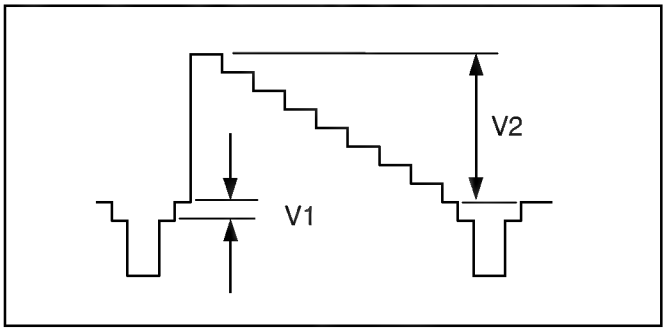
NOTE: In case of use VM700A.

1. Set the blue point position to tip of U-Pivot.
2. Set the Average is ON of VM700A
3. Adjust VR551 so that the vector adjustment locus is match to X point, and it should be in specification.

8-4. Component Y Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 0V ± 7mV, V2 = 700mV ± 7mV
TEST	Y OUT
ADJ.	VR652, VR651
INPUT	Component 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

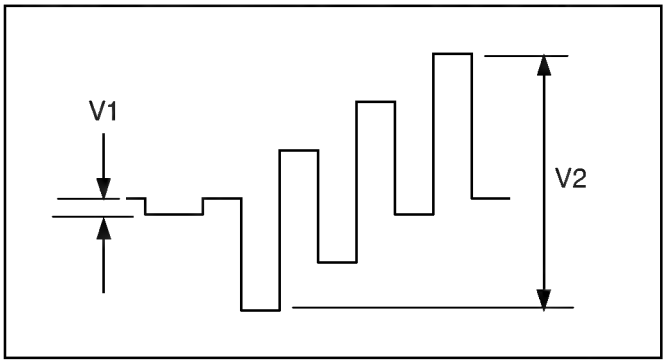
1. Adjust VR652 so that the V1 is 0V ± 7mV.
3. Adjust VR651 so that the V2 is 700mV ± 7mV.



8-5. Component PB Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 0V ± 7mV, V2 = 700mV ± 7mV
TEST	PB OUT
ADJ.	VR703, VR702
INPUT	Component 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

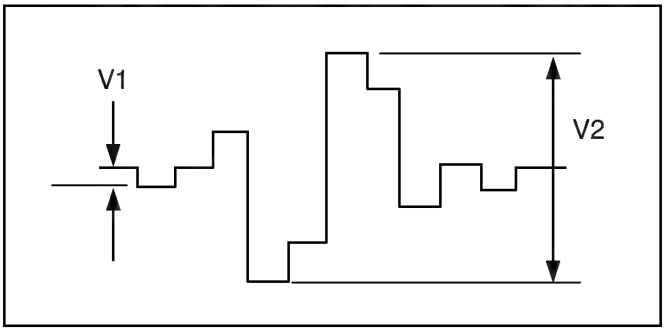
1. Adjust VR703 so that the V1 is 0 ± 7mV.
2. Adjust VR702 so that the V2 is 700m ± 7mV.



8-6. Component PR Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 0V ± 7mV, V2 = 700mV ± 7mV
TEST	PR OUT
ADJ.	VR753, VR752
INPUT	Component 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

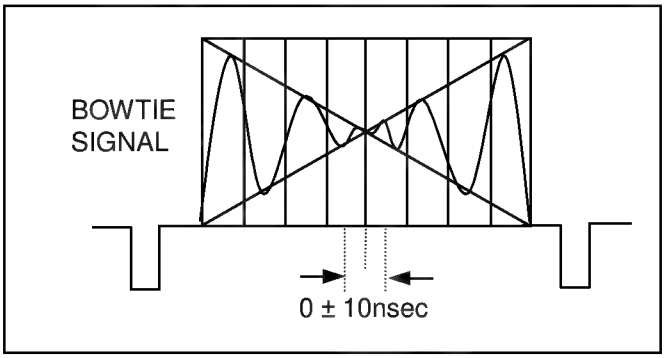
1. Adjust VR753 so that the V1 is 0V ± 7mV.
2. Adjust VR752 so that the V2 is 700mV ± 7mV.



8-7. Component Y/C Timing Adjustment

P.C.B.	V_IN (F6)
SPEC.	0 ± 10nsec
TEST	Y, PB, PR OUT
ADJ.	VR701 (PB), VR751 (PR)
INPUT	Component IN : BOWTIE
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

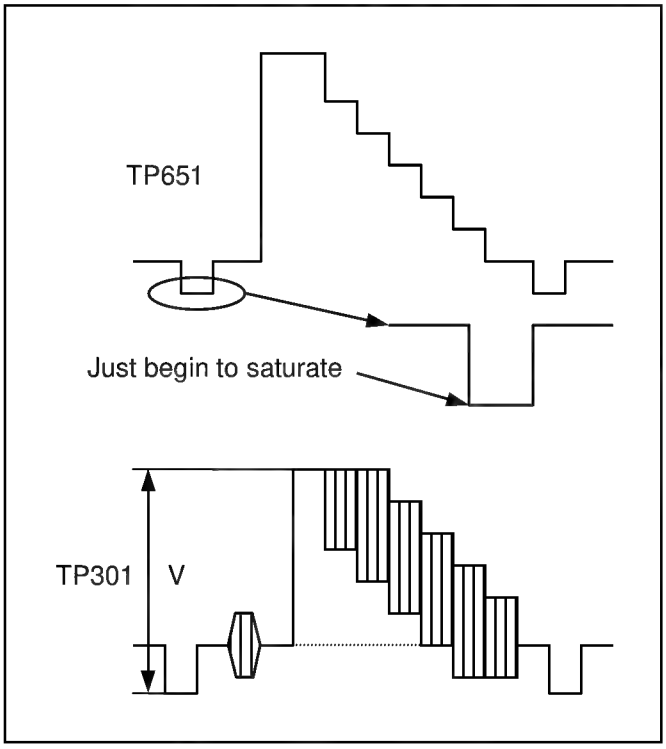
1. Adjust VR701 so that the minimum level of the Y/PB timing signal is 0 ± 10nsec against the center scale.
   Adjust VR751 so that the minimum level of the Y/PB timing signal is 0 ± 10nsec against the center scale.



8-8. Composite Input Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V1 = 1.6V ± 0.02V
TEST	TP651, TP301, GND:TG6
ADJ.	VR301, VR251
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

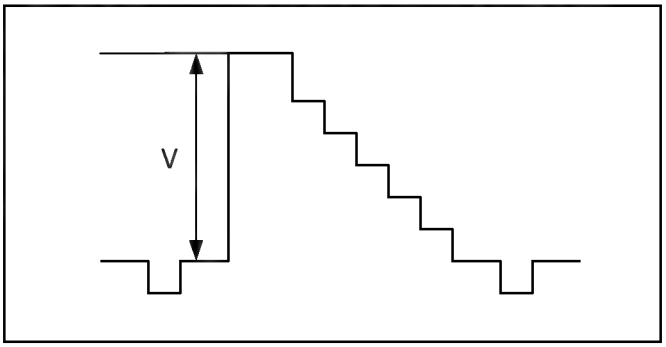
1. Observe TP651 and adjust VR301 at the point where the sync tip just begin to saturate.
2. Adjust VR251 so that the voltage at TP301 is 1.6V ± 0.02V.
   NOTE: Oscilloscope trigger should be connect to Connector P2-16a



8-9. Composite Y Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = 700mV ± 7mV
TEST	Y OUT
ADJ.	VR352
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

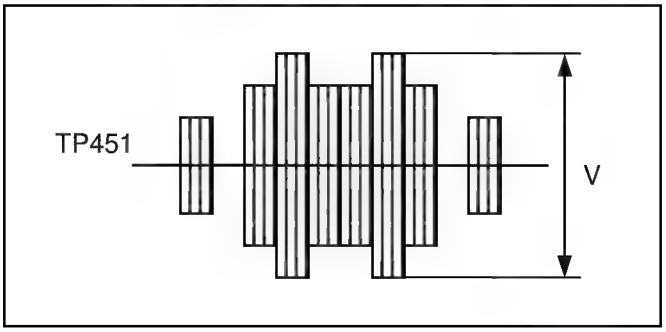
1. Adjust VR352 so that the V is 700mV ± 7mV.



8-10.Composite Chroma Level Adj.

P.C.B.	V_IN (F6)
SPEC.	V = 500mV ± 20mV
TEST	TP451, GND:TG6
ADJ.	VR351
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

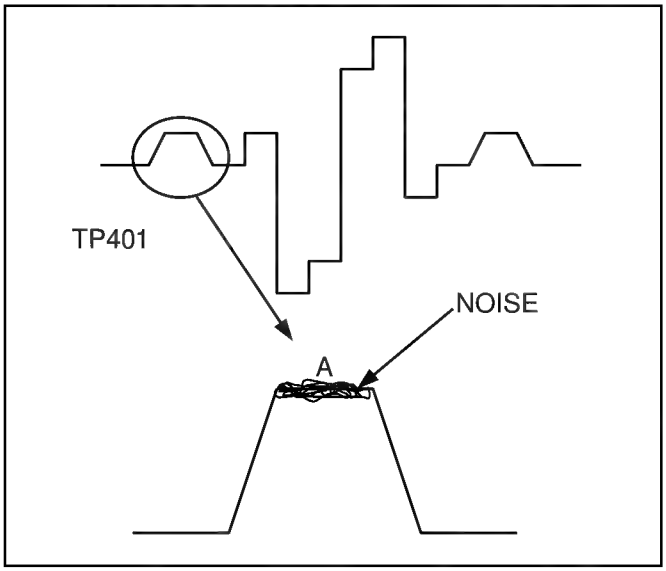
1. Adjust VR351 so that the V is 500mV ± 20mV.
   NOTE: Oscilloscope trigger should be connect to Connector P2-16a.



8-11. Composite Colour Demodulation Adjustment

P.C.B.	V_IN (F6)
SPEC.	See figure
TEST	TP401, GND:TG6
ADJ.	VR408, VR409
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

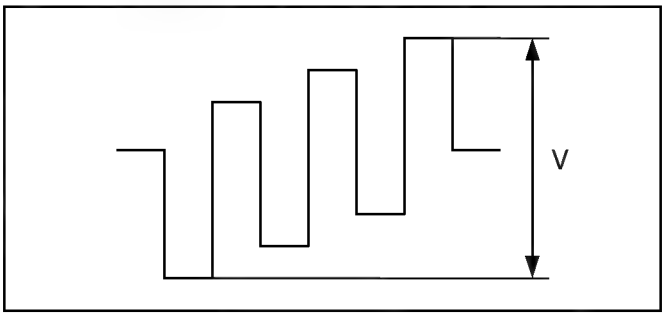
1. Adjust VR409 so that the waveform is as shown in figure (no double image).
2. Adjust VR408 so that the noise portion is positioned on the top of A portion as shown in figure.



8-12. Composite PB Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = 700mV ± 7mV
TEST	PB OUT
ADJ.	VR460
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

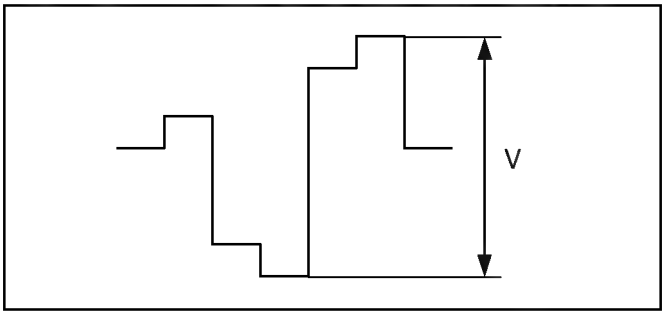
1. Adjust VR460 so that the V is 700mV ± 7mV



8-13. Composite PR Level Adjustment

P.C.B.	V_IN (F6)
SPEC.	V = 700mV ± 7mV
TEST	PR OUT
ADJ.	VR464
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

1. Adjust VR464 so that the V is 700mV ± 7mV

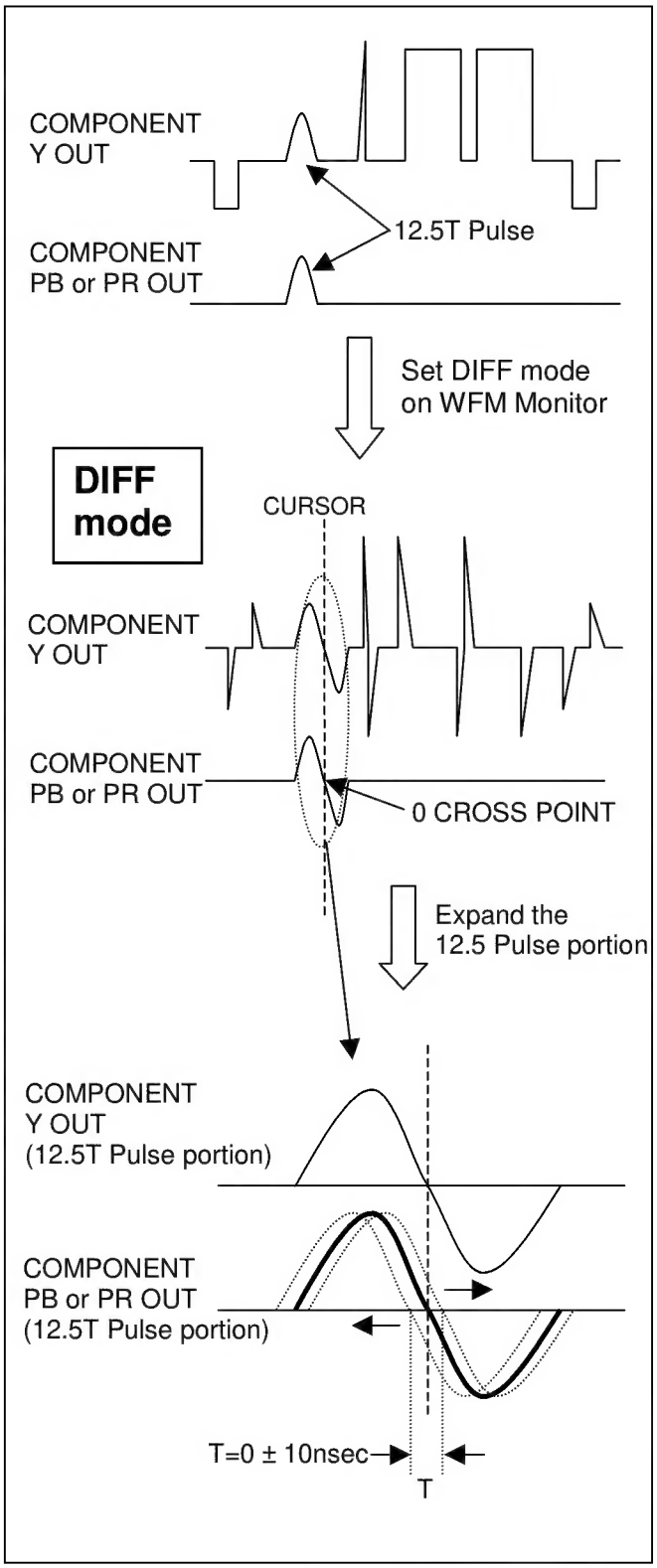


8-14. Composite YC Timing Adjustment

P.C.B.	V_IN (F6)
SPEC.	T = 0 ± 10nsec
TEST	Y PR PB OUT
ADJ.	VR459 (PB), VR463 (PR)
INPUT	Composite IN : 12.5T Pulse & Bar
MODE	EE
TAPE	----------
M.EQ	Waveform Monitor

1. Confirm that the 12.5T Pulse & Bar signal appeared correctly on the scope with Component Y OUT as shown in figure.
2. Confirm that the 12.5T Pulse portion appeared correctly on the scope with Component PB and PR OUT as shown in figure.
3. Set WFM monitor to DIFF mode. In case of set the DIFF mode, waveform of Y, PB and PR signals are integrated as shown in figure.
4. Expand the 12.5 pulse portion (an ellipse dotted portion as indicated as figure) and set the cursor to 0 cross point as shown in figure.
5. Sine-wave is appeared on the scope by expansion as shown in figure.
6. Adjust VR459 (PB) and VR463 (PR) so that the phase synchronized between Y and PB, PR signals.

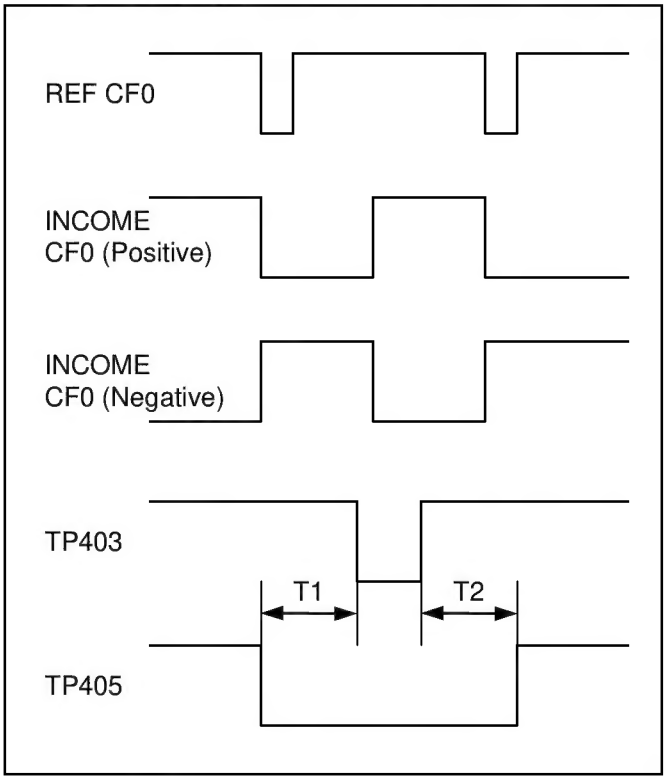
NOTE: Please use type of WFM Monitor attached DIFF mode



8-15. Composite SCH Detection Adjustment

P.C.B.	V_IN (F6)
SPEC.	T1 = T2 : ± 0.5msec
TEST	CF OUT (TEST SIG GEN) Connector P2-8C (INCOME CF0 pulse) TP403, TP405
ADJ.	VR407
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Oscilloscope

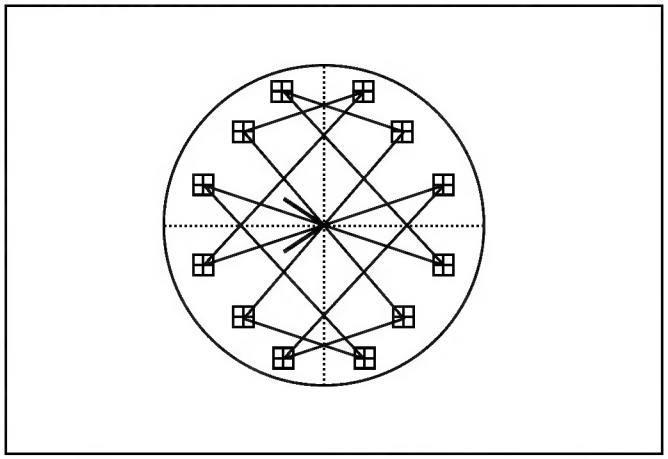
1. Set VR407 fully CCW.
2. If Income CF0 pulse does not negative pulse, slowly turn VR407 CW and set the position where the Income CF0 pulse just changes from the positive to negative phase as shown in below figure.
3. Set the VR407 so that the phase of Income CF0 pulse just changes from the negative to positive position as shown in below figure.
4. Slowly turn VR407 CW so that T1 and T2 portion in specification.



8-16. Composite Vector Adjustment

P.C.B.	V_IN (F6)
SPEC.	All vector dots are in Inner Boxes
TEST	COMPOSITE OUT
ADJ.	VR409
INPUT	COMPOSITE 100% Colour Bar
MODE	EE
TAPE	----------
M.EQ	Vector Scope

1. Adjust VR409 so that the all vector dots are in the inner boxes.



9. AUDIO ADDA

9-1. Initial Setting of Audio Adjustment

< Switch Setting >

1. Set the audio impedance switches as shown below.

SW1	HIGH
SW41	HIGH

< Measurement Equipment Setting >

1. In case of use Audio Precision, please set switches as shown below.

GENERATOR

OUTPUT	A & B	BAL
	50 ohm	FLOAT

ANALYZER

CHANNEL-A	INPUT	100 kΩ
CHANNEL-B	INPUT	100 kΩ

< Service Menu Setting >

1. Set the DIP SW 1-1 to ON at the reverse side of the front panel.
2. Open the Audio Adjust menu on the Service Menu.
3. Set the items as shown below.

E01	METER REF.	Fs - 20
E05	REF. LEVEL2	0 dB
E07	MIC IN LV	ENA

4. Set the DIP SW 1-1 to OFF.

< User Menu Setting >

1. Open the AUDIO item (No. 700 series) of the SETUP-MENU and set the items as shown below.

700	CH1 IN LV	0 dB
701	CH2 IN LV	0 dB
703	CH1 OUT LV	0 dB
704	CH2 OUT LV	0 dB
706	MONI L OUT LV	0 dB
707	MONI R OUT LV	0 dB
708	MONI OUT	VAR
709	EMPHASIS	OFF
714	REC CH1	CH1
715	REC CH2	CH2
722	INT SG	OFF

9-2. Output Balance Adjustment

P.C.B.	A ADDA (F8)
SPEC.	Minimum
TEST	AUDIO OUT : CH1, CH2 MONIOUT : LCH, RCH
ADJ.	VR402 (CH1), VR477 (CH2) VR751 (LCH), VR831 (RCH)
INPUT	INT Signal
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, Monitor TV

1. Set the items on SET UP menu as shown below.

708	MONI OUT	**UNITY**
722	INT SG	**ON**

2. Connect to the oscilloscope as shown below.

Oscilloscope	Output (VTR)
CH1	HOT (AUDIO OUT, MONI OUT)
CH2	COLD (AUDIO OUT, MONI OUT)

3. Set the oscilloscope's mode to ADD, and adjust VR402 so that the CH1 waveform level is minimum.
4. Repeat above adjustment in the same way about the other channels.

9-3. Output Level Adjustment

P.C.B.	A ADDA (F8)
SPEC.	0dBu ± 0.2dBu
TEST	AUDIO OUT : CH1, CH2 MONIOUT : LCH, RCH
ADJ.	VR401 (CH1), VR476 (CH2) VR702 (LCH), VR701 (RCH)
INPUT	INT Signal
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, Audio Analyzer VTVM (Audio Precision)

1. Set the AUDIO item as shown below.

708	MONI OUT	**UNITY**
722	INT SG	**ON**

2. Adjust VR401 so that the CH1 level is in the specification.
3. Repeat above adjustment in the same way about the other channels.
4. Confirm all channels that the sine-wave output is normal.

9-4. Input CMRR Adjustment

P.C.B.	A ADDA (F8)
SPEC.	Less than –60dBu
TEST	TP201 (CH1), TP202 (CH2)
ADJ.	VR1 (CH1), VR41 (CH2)
INPUT	LINE IN (CH1,CH2) 1kHz,0dBu Sine-wave (CMTST)
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, VTVM (Audio Precision), Monitor TV

1. Connect the oscilloscope to TP201.
2. Input the sine-wave signal to HOT and COLD terminal of CH1.
3. Adjust VR1 so that the CH1 output level is minimum and in the specification.
4. Repeat adjustment in the same way about CH2.

NOTE: In case of use Audio Precision, Change the GENERATOR OUTPUT mode to CMTS from BAL.. And after adjustment, return to BAL.

9-5. Input Level Adjustment

P.C.B.	A ADDA (F8)
SPEC.	0dBu ± 0.2dBu
TEST	AUDIO OUT (CH1, CH2)
ADJ.	VR2 (CH1), VR42 (CH2)
INPUT	LINE IN (CH1,CH2) 1kHz 0dBu Sine-wave (BAL)
MODE	EE
TAPE	----------
M.EQ	Oscilloscope, VTVM (Audio Precision), Monitor TV

1. Adjust VR2 so that the CH1 level is in the specification.
2. Repeat adjustment in the same way about CH2.